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ABSTRACT

The National Postsecondary Student Aid Study (NPSAS) is a comprehensive nationwide study conducted by the National Center for Education Statistics to determine how students and their families pay for postsecondary education and to describe some demographic and other characteristics of those enrolled. The study is based on a nationally representative sample of students in postsecondary education, including undergraduate, graduate, and first-professional students at public and private institutions, whether less-than-two-year, two-year, or four-year. Data were available on about 82,000 students, and parents of 18,000 students were selected for a telephone interview. This discussion of survey methodology focuses on: (1) study objectives and design; (2) institution sampling and enlistment; (3) student and parent sampling; (4) institutional records data collection; (5) student and parent surveys; (6) file creation and data analysis; (7) weights and variance estimation; (8) the 1993 NPSAS field test; and (9) a summary and recommendations for survey improvement. Six appendixes provide further details about methodology, including a formulation of the generalized rating model. (Contains 17 figures and 56 tables.) (SLD)

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Technical Report November 1995

Methodology Report for the National Postsecondary Student Aid Study, 1992–93

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NATIONAL CENTER FOR EDUCATION STATISTICS

Technical Report November 1995

Methodology Report for the National Postsecondary Student Aid Study, 1992–93

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Executive Summary

The National Postsecondary Student Aid Study (NPSAS) is a comprehensive nationwide study conducted by the Department of Education's National Center for Education Statistics (NCES) to determine how students and their families pay for postsecondary education, and to describe some demographic and other characteristics of those enrolled. The study is based on a nationally representative sample of all students in postsecondary education institutions, including undergraduate, graduate and first-professional students. Students attending all types and levels of institutions are represented in the sample, including public and private institutions and less-than-2-year institutions, 2-year institutions, and 4-year colleges and universities. The study is designed to address the policy questions resulting from the rapid growth of financial aid programs, and the succession of changes in financial aid program policies since 1986. The first NPSAS study was conducted in 1986-1987, then again in 1989-90. Abt Associates, and its subcontractors, Research Triangle Institute (RTI) and MPR, Inc., designed and completed the 1992-93 study (NPSAS:93) under contract with the NCES.

The NPSAS data is part of the National Center for Education Statistics' (NCES) comprehensive information on student financial aid and other characteristics of those enrolled in postsecondary education. The study focuses on three topics that have important policy implications for financial aid programs:

- How students and their families finance postsecondary education;
- The process of financial aid, i.e., characteristics of the students who apply, those who actually receive it, and examining the different types of aid received; and
- Effects of the receipt of financial aid on the students and their families.

Results of the study are described in three reports: *Profile of Undergraduates in U.S. Postsecondary Education Institutions: 1992-93; Undergraduate Student Financing 1992-93;* and *Graduate Student Financing 1992-93.*

Sample Design

The target population of NPSAS:93 consisted of all students (including those who did and those who did not receive financial aid) enrolled in postsecondary institutions in the United States, the District of Columbia, and Puerto Rico during the 1992-93 financial aid award year, excluding students who were enrolled solely in a GED program or were concurrently enrolled in high school.

The survey frame for NPSAS:93 was based on postsecondary institutions. Institutions provided enrollment files and graduation lists that constitute the frame for the student sample, in addition to locating enrollment and financial aid data about the students selected for the

study. The institutional sampling frame for NPSAS:93 was built from the 1990-91 Integrated Postsecondary Education Data System Institutional Characteristics file (IPEDS-IC). The IPEDS-IC file was supplemented with the Office of Postsecondary Education Data System (OPE-IDS) file of institutions eligible to participate in the Stafford and/or Pell Grant student aid programs as of April 15, 1992. Institutions added to the sampling frame were carefully examined to assure that they were for eligible institutions and non-duplicative.

About 82,000 students were selected from enrollment files supplied by the institution coordinators at about 1,100 participating institutions. The total number of selected students for NPSAS:93 was greater than the targeted total number of approximately 77,900 eligible sample students to compensate for expected rates of student ineligibility.

Parents of a subsample of about 18,000 students were identified for a telephone interview designed to gather data concerning the effects of postsecondary education on family finances. The parents of students who were either dependent undergraduates, or aided independent undergraduates under 24 years of age, and whose financial data were not obtained from the school, or were baccalaureate recipients were eligible for the parent interview. The parent interview consisted of six modules: Parental Support, Dependents, Employment and Financial Condition, Parent Demographics, Sample Student Education, and Attitudes.

Data Collection

Advance mailings were sent to the Chief Administrators of the 1,386 institutions selected for participation beginning in February 1993. The letter to the Chief Administrator distinguished between a NPSAS:90 participating institution and those new to the sample. Participating sampled institutions were requested to provide enrollment files containing all eligible students enrolled during the study period. Once the student sample was selected, institutions were contacted again to arrange for the data abstraction from student financial aid and other administrative records maintained by the institutions. The institutions could choose to complete the record abstraction tasks themselves, (i.e., be "self-administered"), or receive the assistance of an Abt/RTI field representative to abstract the student records.

Student record abstraction software was used to abstract comprehensive information about the student's involvement with the institution, the amount(s) of financial aid awarded and the student/family's income and assets. Data were abstracted from the student financial aid and other administrative records maintained by the institution. A menu-driven computer assisted data entry (CADE) software was designed for use in abstraction of student data. Seven modules were created within the software for NPSAS:93: (1) data about the students at the institution, e.g., whether the institution participates in federal student aid programs; (2) terms of enrollment, credit or clock hours, and other data pertinent to all students in that institution; (3) student and parent locating information; (4) student characteristics; (5) student financial aid awarded; (6)student's need analysis and budget; and (7) financial aid eligibility information.

The students selected for NPSAS:93 were contacted for a telephone interview. The student interviews were conducted using a computer-assisted telephone interview (CATI)

system where student record data already abstracted through the CADE were preloaded into CATI to minimize the length of the telephone interview. The purpose of the student interview was to collect information on additional sources used by students in the financing of their education, expenses and aid obtained at institutions other than the sampled institutions. Students sampled for the Baccalaureate and Beyond (B&B) cohort--those who graduated in 1992-93--were administered a slightly longer questionnaire that included items on future plans related to education, occupation and family formation.

Response Rates

Response rates for NPSAS:93 have been calculated for two levels of institutional participation -- those institutions providing student enrollment lists as frames for student sample selection and those providing the financial aid and other data abstracted from administrative records. In addition, response rates have been calculated for student and parent participation in the telephone interview component of the study.

Weighted response rates were calculated based on the institutional probabilities of selection. The weighted response rates can be interpreted as the estimated percentages of institutions in the population that would have participated, if selected. The overall weighted response rate for providing student enrollment lists was about 88 percent, ranging from 80 percent of the private for-profit schools to about 96 percent of the public institutions. About 98 percent of institutions agreeing to participate provided some information needed for locating sampled students.

Students were considered CATI respondents if they completed at least Section A of the CATI interview. Of the 77,000 CATI-eligible sample students, about 53,000 or nearly 70 percent of the CATI eligibles, were interviewed. The overall parent response rate was about 62 percent. More detailed information on response rates is presented in Chapters 4 and 5.

Data Access

Data from the NPSAS:93 and other NCES data programs are made available through the Data Analysis System (DAS) and the Electronic Code Book (ECB). NPSAS:93 student-level data are derived from record abstracts and student and parent telephone interviews. In analysis, data may be drawn from any of seven separate data sets for undergraduate students and graduate students (including first professionals). The institutional data (CADE) and telephone interview (CATI) files contain data either abstracted directly from institutional administrative records or entered during telephone interviews with students and parents. Data from all parent interviews are included in a single data set. Derived variables are constructed from either the CADE or CATI or both sources. For each of the derived variables, the DAS includes an indicator for the source of the information. The verbatim files include responses from "Other, specify" items and verbatim response to items concerning student's majors, and the industry and occupation of jobs held by the student. Student majors and industry and occupations were coded during the telephone interviews using software developed by NCES for this purpose and the codes for these items are in the derived variable files.

Findings Some of the major findings of the NPSAS:93 described in a recent NCES Tabulation, #95-746 are presented below. Appendix E contains additional summary information.

AMONG THE 18.5 MILLION UNDERGRADUATES (INCLUDING FULL-TIME AND PART-TIME STUDENTS) ENROLLED DURING 1992-93:

- About 40 percent (almost 7.7 million) received financial aid from some source, including federal or state governments, institutions, or other private organizations, or combinations of these sources (excluding aid from relatives); averaging about $4,200. About 1 of every 3 received some type of federal aid; about 2 of every 10 received federal grants.

- Percentages of students receiving financial aid varied considerably, depending on the type of institution. Percentages ranged from about 27 percent of the 8.2 million undergraduates at public 2-year institutions to 75 percent of the 830,000 enrolled at private, for-profit, less-than-2-year institutions.

- Overall, about 1 of every 3 undergraduates received some grant aid (including grants from federal and state governments, institutions, and/or employers). About 3 of every 4 dependent undergraduates from families with incomes less than $10,000 received some grant aid, averaging about $3,100.

AMONG THE 2.7 MILLION GRADUATE AND FIRST-PROFESSIONAL STUDENTS (INCLUDING FULL-TIME AND PART-TIME STUDENTS) ENROLLED DURING 1992-93:

- About 4 of every 10 graduate/first-professional students received some financial aid from any source, including federal or state governments, institutions, or employers; averaging $8,500. Nearly 70 percent of those enrolled full-time/full-year received aid, compared to about 20 percent of those enrolled part-time/part-year.

- About 20 percent received some type of federal aid, averaging $8,550; about 1 of every 6 received some institutional aid, averaging about $5,100; 1 of every 16 received some employer assistance, averaging about $2,450.

- Percentages of graduate students receiving financial aid varied considerably, depending on the type of degree program. Almost 30 percent of the 1.7 million students enrolled in master's programs compared to about 66 percent of the 300,000 students enrolled in first-professional programs (e.g., law school, medical school, dentistry).

- Average amounts varied considerably, depending on the type of program. Among the 475,000 aided students in master's programs, the average amount of aid received was about $6,500. For the 150,000 aided doctoral students the average amount was nearly $10,200; and for the 210,000 aided first-professional students, the average amount was more than $14,100. Overall, about 6 of every 10 first-professional students received some loan aid, averaging about $13,300.

ACKNOWLEDGMENTS

Abt Associates Inc., with Research Triangle Institute (RTI), and MPR Associates, Inc. conducted the 1993 National Postsecondary Student Aid Study (NPSAS) under contract with the National Center for Education Statistics (NCES). John D. Loft of Abt Associates provided project direction and management with John A. Riccobono of RTI and Robert A. Fitzgerald of MPR Associates. A cadre of other staff--including statisticians, analysts, survey managers, programmers, and data collectors and interviewers--too numerous to list here worked long hours to produce the data files and reports of the 1993 NPSAS.

The project is also indebted to the staff of over 1,000 postsecondary education institutions who assisted in the institution records collection and to the over 70,000 students and parents who generously participated in the telephone survey. Without their willingness to share information, the 1993 NPSAS would not exist.

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Andrew G. Malizio served as the NCES project officer who managed the study under the overall supervision of C. Dennis Carroll, Longitudinal Studies Branch. Paul D. Planchon, Associate Commissioner at NCES, provided management and direction.

Throughout the design, implementation and analysis phases of the study, the NPSAS Technical Review Panel members provided helpful suggestions for improving the quality of data collected. The National Center for Education Statistics is indebted to all these individuals who assisted NCES and Abt in the planning, design and implementation of the study.

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CHAPTER 1 STUDY OBJECTIVES AND DESIGN

The National Postsecondary Student Aid Study (NPSAS) is a comprehensive nationwide study conducted by the Department of Education's National Center for Education Statistics (NCES) to determine how students and their families pay for postsecondary education, and to describe some demographic and other characteristics of those enrolled. The study is based on a nationally representative sample of all students in postsecondary education institutions, including undergraduate, graduate and first-professional students. Students attending all types and levels of institutions are represented in the sample, including public and private institutions and less-than-2-year institutions, 2-year institutions, and 4-year colleges and universities. The study is designed to address the policy questions resulting from the rapid growth of financial aid programs, and the succession of changes in financial aid program policies since 1986. The first NPSAS study was conducted in 1986-1987, then again in 1989-90. Abt Associates, and its subcontractors, Research Triangle Institute (RTI), and MPR, Inc. designed and completed the 1992-93 study (NPSAS:93) under contract with the NCES.

1.1. Objectives of the National Postsecondary Student Aid Study: 1993

1.1.2 Research, Policy and Programmatic Issues Addressed by NPSAS

A main objective of the study is to produce reliable national estimates of characteristics related to financial aid for postsecondary students. The data is part of the National Center for Education Statistics' (NCES) comprehensive information on student financial aid and other characteristics of those enrolled in postsecondary education. The study focuses on three topics that have important policy implications for financial aid programs:

- How students and their families finance postsecondary education;
- The process of financial aid, i.e., characteristics of the students who apply, those who actually receive it, and examining the different types of aid received; and
- Effects of the receipt of financial aid on the students and their families.

The first topic addresses the sources of financial aid and measures whether different need analysis systems used to determine the need for financial aid are sensitive to changing costs. The second topic describes various strategies used to finance postsecondary education, and how they might be predictive of changes in financial aid programs. What are the differences between Federal financial aid and aid from other sources, and the distribution among students at different types of postsecondary institutions? The third topic addresses the concerns about the effects of the actual receipt of financial aid, for example, the level of debt due to education and the student/family's ability to repay it; the effect of financial aid on student persistence/completion of postsecondary education.

The NPSAS:93 also contributes to additional studies described in the General Education Provisions Act (GEPA). The topics include the:

- Current costs to students and their families of postsecondary education, graduate education, and post-baccalaureate professional education;
- Effects of changing school-related expenses on postsecondary education costs for students at various socioeconomic levels, with differing demographic characteristics (Title XIII, Part A, section 1303 HEA, 1986);
- Research on postsecondary opportunities for minorities and women (Title XIV, section 1401 HEA, 1986);
- Study of financial aid formulae, especially more equitable formulae for students from farm families (Title XIII, Part A, section 1303 HEA, 1986)

Results of the study are used to help determine federal policy regarding student financial aid. The NPSAS:93 data permit detailed simulation and modeling of program costs, assessment of the impact of changes in policies on program costs and program populations. The data describes the postsecondary student population in terms of its enrollment, demographic and financial characteristics, and activities of postsecondary education students. Results of the study are described in three reports, *Profile of Undergraduates; Undergraduate Student Financing*, and, *Graduate Student Financing*. In addition, data from the survey are available through NCES' Data Analysis System (DAS) and Electronic Codebook (ECB).

1.1.3 Methodological Issues

As described in detail below, the NPSAS survey design is both large and complex. Data on nearly 2,000 data elements are collected from a very diverse set of respondents, including a wide array of postsecondary institutions and a variety of students and parents. Over 1,000 postsecondary institutions, 60,000 students, and 11,000 parents participated in the NPSAS:93. One of the methodological concerns underlying NPSAS is designing a data collection system that has the flexibility to gather comprehensive financial data from the most appropriate source and at the same time provide some assurance of comparability in data collection for each element. Of the potential respondents for NPSAS -- institution, student, or parent -- none alone can necessarily provide a complete and accurate summary of postsecondary education financing. Financial aid offices maintain accurate records of financial aid at that institution, but these records may be incomplete. These records may not contain financial aid provided at other institutions attended by the student and they cannot provide detailed information on sources of educational financing other than financial aid. Students and their parents are more likely than institutions to have a comprehensive picture of education financing, but may not have accurate memory or records of exact amounts and sources. The NPSAS data requirements call for a strategy that builds a comprehensive and accurate understanding of postsecondary education financing from a number of different sources.

In order to meet this challenge, NPSAS:93 relied on a highly integrated system of computer assisted data capture instruments. The NPSAS Integrated Control System (ICS) provided the framework for articulating modules developed to abstract data from financial aid and other administrative records maintained by institutions and gather data from telephone interviews with students and parents. Additional modules of the ICS provided editing of these data, preloading data from one module to another (as, for example from the record abstract system to the student telephone interview), and preparing routine production and management reports. Communication modules of the ICS provided the capability for transfer of data from the field to a central office and also for routine communication via electronic mail between all members of the project team.

In addition to this general methodological strategy, the NPSAS:93 field test provided an opportunity to evaluate particular features of the survey design. The general objectives of the NPSAS:93 field test were to (1) evaluate the timing of key data collection activities; (2) evaluate data collection systems; (3) test methods for increasing participation in NPSAS; and (4) determine whether certain students could be induced to take the Graduate Record Examination (GRE) in order to measure student ability and other factors that may affect student achievement.

1.2. Sample Design

1.2.1 Target Population

The target population of NPSAS:93 consisted of all students (including those who did and those who did not receive financial aid) enrolled in postsecondary institutions in the United States, the District of Columbia and Puerto Rico, during the 1992-93 financial aid award year (terms beginning from July 1, 1992 through June 30, 1993), excluding students who were enrolled solely in a GED program or were concurrently enrolled in high school. The survey population was defined as those students who were enrolled in any term or course of instruction that began between May 1, 1992 and April 30, 1993. In this way student sampling could be obtained during the Spring, 1993.

An important feature of the NPSAS:93 study design was the selection of a subsample of students representing the cohort that received a baccalaureate degree during the NPSAS year. A longitudinal study of baccalaureate recipients, Baccalaureate and Beyond (B&B), began with NPSAS:93 as the base year. These students will be interviewed annually, beginning in the NPSAS year, and during five subsequent years, to determine the impact of financial aid arrangements on their future educational attainment, labor force participation, and family formation. The sample design is fully described in Chapters 2 and 3.

1.2.2 Survey Frame

The survey frame for NPSAS:93 was based on postsecondary institutions, the primary source of information for NPSAS. Institutions provided enrollment files and graduation lists that constitute the frame for the student sample, in addition to critical locating, enrollment and financial aid data about the students selected for the study. The institutional sampling frame for NPSAS:93 was built from the 1990-91 Integrated Postsecondary Education Data System

Institutional Characteristics file (IPEDS-IC). The IPEDS-IC file was supplemented with the Office of Postsecondary Education Data System (OPE-IDS) file of institutions participating in the Stafford and Pell student aid programs as of April 15, 1992. Records added to IPEDS-IC were carefully examined to assure that the added records were for eligible institutions and non-duplicative. This list of institutions formed the universe for sample selection of NPSAS:93 postsecondary institutions.

1.2.3 Sampling Units and Selection

The NPSAS:93 was a stratified multi-stage probability sample of students enrolled in postsecondary institutions. Both institutions and students were sampled for participation in the study of postsecondary education.

Institutions

Initially, the study design employed a two-phase sample selection process for institutions. First, geographic areas based on three-digit postal ZIP codes were selected as primary sampling units (PSUs) from metropolitan statistical areas and counties in the United States including the District of Columbia and Puerto Rico. Second, postsecondary institutions were selected from within the PSUs, from the subsets of the IPEDS IC and OPE-IDS frames, located in the sample areas. Twenty-two strata were defined for the selection of institutions from the 176 area sample PSUs. Sampling strata were developed through the classification of institutions by two criteria. The first criteria, **type of ownership (or control)**, was categorized as follows:

- Public - Operated by a state, county, or municipal entity - state colleges, universities, and community colleges.
- Private, nonprofit institutions - Operated on a non-profit basis and not publicly-owned.
- Private, for-profit institutions - Owned by an individual or corporation as a profit-making enterprise.

The second criteria, **level**, was defined as the length of time required to complete the highest degree offered. The levels were:

- Four-year (or longer) programs that offer a baccalaureate or higher degree.
- Programs of at least two years, but less than four.
- Less-than-two-year programs

A sample of 1,386 institutions was allocated to the 22 strata and two sampling frames. Eligible sample institutions were invited to participate in NPSAS:93 by providing a list of students enrolled during the period May 1, 1992 through April 30, 1993 (the NPSAS survey year) and by providing information abstracted from the financial aid and other administrative records of selected students.

Students

A total of 82,016 students were selected from enrollment files supplied by the eligible and participating institutions. Students subsamples were based on these student categories:

- Four-year institution baccalaureate recipients
- Other undergraduates, graduate students, and first-professional students
- Students from 2 - 3 year institutions
- Students from less than 2-year institutions

The total number of selected students for NPSAS:93 was greater than the targeted total number of eligible sample students, 77,875, to compensate for expected rates of student ineligibility.

Parents

Parents of a subsample of 18,129 students were identified for a telephone interview designed to gather data concerning the effects of postsecondary education on family finances. In addition, in some cases, data are more reliably obtained from parents regarding the financing of a student's postsecondary education. The parents of students who were baccalaureate recipients, and were either dependent undergraduates, or aided independent undergraduates under 24 years of age, and whose financial data were not obtained from the school, were interviewed.

1.2.4 Summary of Response Rates

Unweighted and weighted response rates were computed for institutions and students sampled for the study. Unweighted response rates were computed as the ratios of the number of sampled units that completed the survey over the number of eligible units in the sample. Ineligible institutions were deleted from the sample before data collection, and were not included in the denominator when calculating response rates. Weighted response rates were computed as the estimated percentages of students or institutions in the population that would have responded if asked. A full discussion of institution and student weighting factors appears in Chapter 7.

The following summarizes response rates for NPSAS:93. Detailed discussion of data collection and response rates are presented in Chapters 2 - 5.

Institutional Response Rates for Student Sampling Lists

Of the 1,386 sample institutions, 1,243 were determined to be eligible for NPSAS:93 and 1,098 eligible institutions provided lists that could be used for sample selection. Therefore, 88.3 percent of eligible sample institutions provided lists that could be used for sample selection. The overall weighted response rate was 88.2 percent.

Institutional Response Rates for Student Record Abstraction

Student records were successfully abstracted for 1,079 of the 1,098 (98.3 percent) eligible institutions that provided lists for sample selection. The weighted response rates, interpreted as the estimated percentages of eligible institutions that would participate in the records abstraction assuming that they would provide student lists for sample selection, was 96.0 percent.

Base Study Student Response Rates

There were 82,016 sample students identified for the Base NPSAS:93,with 79,269 ultimately determined to be eligible sample students. Of 79,269 ultimately eligible, 66,096 were classified as respondents. The unweighted response rate was 83.4 percent. The overall weighted response rate, interpreted as estimated percentages of students attending institutions willing to provide lists for student sampling who would have been classified as respondents if selected was 79.3 percent.

B&B Cohort Student Response Rates

The number of eligible sample students identified as belonging to the B&B cohort was 16,316. There were 11,810 or 72.4 percent were respondents. The weighted response rate for the B&B cohort was 75.4 percent.

CATI Interview Student Response Rates

Of the total number of NPSAS-eligible sample students, 77,003 were eligible for CATI. Of the 77,003 CATI-eligibles, 52,964, or 68.8 percent were CATI respondents. The weighted and effective student CATI response rates were 67.3 percent and 71.4 percent, respectively.

CATI Interview Parent Response Rates

Of the 18,129 parents sampled for the parent interview, 11,207 agreed to participate in the survey. The overall unweighted and weighted parent response rates are nearly identical, 62.9 percent and 62.7 percent respectively.

1.3 Design of Data Collection

The Integrated Control System (ICS) was developed for NPSAS:93 to manage all information collected as part of the NPSAS:93 survey. The ICS is a system of interrelated data bases and modules relevant to the practical aspects of survey management. The ICS provided two important features:

1) Although modules are discrete entities, the information from different modules could be combined for varying purposes;

2) Separate pieces of the ICS can operate independently, and each was implemented according to a schedule required for project needs.

Student financial aid packages and the circumstances surrounding the awards are complex. Multiple sources of data are necessary to study the funding process of postsecondary financial aid. Past studies of postsecondary financial aid, and the most recent

NPSAS:93, were designed to include separate federal, state, institutional, student, and parent data components, in order to obtain a complete record of financial aid. The educational institutions are the best source for information about how a student's eligibility for aid and the amount of aid awarded is determined. The institutions also provide the most accurate records of the amount of financial aid received and the details of the financial aid package, including the source of funding. Students are the best source of information pertaining to the actual costs of their education, their financial resources, and personal characteristics and attitudes. As both students and institutions often lack complete information about parent finances and financial obligations, the parents are the best source of a family's financial information when a student is dependent and unaided.

Although NPSAS:93 included separate data collection components from institutions, students, and parents, some overlap of data elements were built into the data collection instruments as measures of accuracy and reliability. For example, although the institutional records are regarded as the best source of data on financial aid awards, financial award data was also collected from students. The institutional information and student self-report data were compared in order to corroborate the financial aid data. In addition, student data was used to complete missing information, in cases where the institutional information were not collected, or if the student attended other schools and institutional records had not been examined, or if the student happened to obtain financial aid from another source (i.e, an employer, family, private organization), and the institution had not been informed.

1.3.1 Description of Instruments and Data Collection Procedures

Institutional Records Data Collection Software

The student record abstraction software was used to abstract comprehensive information about the student's involvement with the institution, the amount(s) of financial awarded and the student/family's income and assets. Data were abstracted from the student financial aid and other administrative records maintained by the institution. A menu-driven computer assisted data entry (CADE) software was designed for use in abstraction of student data. Seven modules were created within the Records Abstract Software for NPSAS:93. The first module was designed for data about the students at the institution, e.g., participation in federal student aid programs, terms of enrollment, credit or clock hours, and other data pertinent to all students in that institution. Other modules were designed for specific student information: student and parent locating information gathered for follow-up purposes, periods of student enrollment, student characteristics, actual financial aid awarded, the student's need analysis and budget; financial aid eligibility information contained in output documents, and financial aid formulae used to determine a student's need.

Student CATI Interview

The students selected for NPSAS:93 were contacted for a telephone interview. The student interviews were conducted using a computer-assisted telephone interview (CATI) system where student record data already abstracted through the CADE were preloaded into CATI to minimize the length of the telephone interview. The purpose of the student interview was to collect information on additional sources used by students in the financing of their education, expenses and aid obtained at institutions other than the sampled institutions.

Students sampled for the B&B cohort were administered a slightly longer questionnaire that included items on future plans related to education, occupation and family formation.

Parent CATI Interview

Three types of information were collected during the parent interview. Parents were asked to describe the financial support that they had given to the student, i.e., dollar amounts, source of the funds and whether the support was a contribution or loan. They were also asked about other dependents to whom they had provided support, total number of dependents and the total tuition paid for college, elementary and secondary schools. They were asked to describe their personal finances, sources of income, and any money that they had borrowed to provide financial aid to the sampled student. There were six separate modules in the parent CATI interview: Parental Support, Dependents, Employment and Financial Condition, Parent Demographics, Sample Student Education, and Attitudes.

Data Collection Procedures

The NPSAS:93 data collection methods were specifically designed to maximize response rates of institutions, parents and students. Serious attempts were also made to minimize efforts required during data collection and to fully gain cooperation of all respondents.

Contacts with institutions began in February, 1993. Advance mailings were sent to the Chief Administrators of the 1,386 institutions selected for participation. If a school had previously participated in a NPSAS survey, the letter to the Chief Administrator distinguished between a NPSAS:90 school and those new to the sample. Participating sampled institutions were requested to provide enrollment files containing all eligible students enrolled during the study period. Once the student sample was selected, institutions were contacted again to arrange for the data abstraction from student financial aid and other administrative records maintained by the institutions. The institutions could choose to complete the record abstraction tasks themselves, (i.e., "self-administered"), or receive the assistance of an Abt/RTI field representative to abstract the student records.

Student Institutional Records Data Collection (CADE). The CADE software insured uniformity, comparability and quality of the data collected from diverse institutions. Every effort was made to encourage school representatives most familiar with the institutional student records to utilize the menu-driven CADE method for abstraction of institutional data. If the school required assistance, a field interviewer was used to collect data. "School-specific" information was electronically transmitted to the Field Interviewer prior to the institutional visit. The information was "pre-loaded" into the CADE program used for each institution to minimize data collection time, and maximize accuracy. The Abt/RTI field staff were specially trained to abstract the necessary data from administrative records at the institutions.

Downloading directly from the institution's computerized system was considered and was discussed with the data processing staff of several institutions, both in the field test and in the full-scale study. However, costs of the programming effort required for the download exceeded the cost of CADE data in each instance where downloading was considered.

Comprehensive information was obtained for the students who would be selected for the B&B cohort sample. Information for the entire undergraduate period of students earning a baccalaureate degree between July 1, 1992 and June 30, 1993, institutions was gathered.

Because the data requested in each module could exist in several locations on school campuses, each was designed so that it could be completed for all sampled students at once. If a complete set of student records did happen to be present in one location, the entire CADE questionnaire could be completed for each student.

Institution-level student data from self-administered institutions were collected from July through August 1993. Field interviewers who assisted in data collection conducted institution visits from June through December 1993.

Student and Parent Telephone Interviews. Overlapping record abstract data were preloaded into the telephone interview to minimize its length. Both the student and parent questionnaires were designed so that either one could be administered first. Therefore, if similar data elements were already provided by one respondent, those questions were not repeated during that family's second interview.

The student and parent telephone data collection began September 6, 1993, and was conducted until March 21, 1994.

1.3.2 Quality Control Methods

CADE System

To insure the completeness of the record abstraction, answers to certain questions were essential in order to fulfill the record abstraction task. Questions were designated as *Hard Critical* and *Soft Critical* questions. Nine hard critical questions required an answer before data entry could be continued. If an attempt was made to leave a hard critical question blank, the data collector could not proceed.

Ten soft critical questions also required an answer. If an attempt was made to leave a soft critical question blank, the option was to enter either an answer or a reserve code, before continuing to the next question. Entry of a reserve code indicated that attempts were made to locate the necessary information, but it was "U"--"unavailable" or "unspecified". Reserve codes became separate categories for analysis purposes.

Range checks were established and coded into the CADE system. Range checks were established as a check for data entry errors. If an out-of-range number was entered into the program, a re-check of the data entry was required. A corrected entry could be made, or if the out-of-range number was correct, data entry could continue after the re-check.

Skip patterns were also programmed into the CADE system to maximize data entry efficiency and to safeguard against incorrect entry of information.

During the field test, a small-scale verification of record abstract data with institutions was conducted. A CADE validation form to verify a limited number of data elements was

requested for nine student records from each of 11 institutions. Responses for 96 of the 99 students were returned. A high level of agreement was found between the initial reports, and the validation reports for Pell Grants, Federal College Work-Study Program and Stafford Loans. The percentage of updates ranged from 1 percent to 2.1 percent. In about 6 percent of the cases, the date of first enrollment was updated. The largest differences were found in Need Analysis Tuition reports, where 21 of 96, or 22 percent, of student records were updated, mostly attributable to missing data in the initial collection.

In both the field test and the full-scale study, an additional edit step occurred in the central office prior to preloading data into the CATI system. An ICS module, CADE-Operations, was developed to keep track of data files returned from institutions on diskette or from field data collectors via telephone and modem. This module also included a feature to monitor the completeness of each institution's data file. Institutions with a large amount of missing data were identified for follow-up efforts.

CATI System

Telephone interviewing personnel were required to adhere to high performance standards, to meet the expected quality and production levels. The performance standard was four completed cases per interviewer for each six hour shift, and each interviewer was monitored at least once during each shift. Performance was monitored for the application of proper interviewing techniques, interview production rates, refusals, and breakoffs. Interviewers were selected for monitoring using the Monitoring Log, a part of the software program used to help prioritize the monitoring schedule during each shift, and the Daily Seating Chart, used to develop the monitoring schedule for each shift. Supervisors had the responsibility to insure the high quality of the data collected. Procedures were developed and used for this purpose.

Follow Up on Call-Backs and Appointments

Telephone Interview Supervisor had primary responsibility to review the appointments for daily reports at the beginning of every shift. The review was conducted to ensure that call-backs and appointments made were not missed. The supervisor followed up with interviewers, or assigned specific cases for interviewers to complete.

Status of Cases Review

Status of cases were reviewed by Telephone Interview Supervisors. The review was conducted with the aid of reports that delineated the status of cases according to specific requirements: locating, refusal conversion, bilingual interviewer. After status review, the supervisor classified cases to the appropriate queue and/or moved them if status had changed.

Each week, the Case Status by Number of Attempts Report was reviewed. When a case had more that 10 attempts, a critical review was made by the supervisor to determine exactly why contact had not been made. Cases were reviewed using these criteria: missing locating information; calls made at the same time of day each attempt, case coded correctly, special notation in case comments to explain problem.

1.4 Data Files and Reports

1.4.1 Description of Files Created

Table 1.1 outlines the data sets available in NPSAS:93 Data Analysis System (DAS) and Electronic Codebook (ECB). Analysis files have been created for the data obtained directly from the record abstract system (CADE) and the student and parent telephone interviews (CATI). In addition, a series of about 800 variables have been derived from either the CADE or CATI data. Finally, verbatim descriptions of certain "other specify" responses and of responses to queries about student major and industry and occupation will be available to researchers. A listing of the data elements from CADE and CATI and the Derived Variables is provided in Appendix A.

Table 1.1 Data Files for NPSAS:93

	Graduate Students	Undergraduate Students[a]	B&B Students
Record Abstract (CADE)	*713 variables for 13,399 students*	*715 variables for 52,697 students*	*715 variables for 14,553 students*
Student Telephone Interview (CATI), excluding B&B items	*562 variables for 13,399 students*	*562 variables for 52,697 students*	*N/A*
Student Telephone Interview (CATI), including B&B items	*838 variables for 13,399 students*	*838 variables for 52,697 students*	*838 variables for 14,553 students*
Derived Variables	*452 variables for 13,399 students*	*499 variables for 52,697 students*	*499 variables 14,533*
Parent Telephone Interview (CATI)	*11,281 parents*[b]		
IC/OC and Major Verbatim Files	*66,097 data records*		
Verbatim Strings (CADE)	*378,964 data records*		
Verbatim Strings (CATI)	*209,553 data records*		

[a]Includes B&B Students

[b]Variables from the parent questionnaire are included in the counts of student CATI variables

1.4.2 Relationship of variables and files to prior NPSAS Surveys

For comparability purposes, many variables in NPSAS:93 based on institution and/or telephone interview data were created similarly to variables in prior NPSAS studies, (for example, total loans and total grants). The NPSAS:93 analysis file also contains a variable that allows researchers to included only those students from NPSAS:93 sampled in terms similar to those in the NPSAS:87 sample, (i.e., fall only and not enrolled in Puerto Rico). As explained in a recent NPSAS:93 tabulation (see *National Postsecondary Student Aid Study: Estimates of Student Financial Aid 1992-93,* NCES 95-746, June 1995), those estimates will not reflect total expenditures as reported by the Department's specific Title IV program offices. Those interested in the methodology for NPSAS:87 should refer to the *Methodology Report for the National Postsecondary Student Aid Study, 1987* (NCES 90-309, March 1990); the NPSAS:90 procedures are descibed more fully in the *Methodology Report for the 1990 National Postsecondary Student Aid Study,* NCES 92-080, May 1992). Further, researchers are encouraged to read the descriptions of variables contained in the electronic codebook and the Data Analysis Systems to determine comparability across years. For example the total income variable in NPSAS:90 refers to the total adjusted gross income. In NPSAS:93, several income variables are included on the analysis file, including total income from all sources, adjusted gross income (for federal financial aid applicants) and income from all jobs.

CHAPTER 2 INSTITUTION SAMPLING AND ENLISTMENT

2.1 Investigating Two-Stage Versus Three-Stage Sample Selection

A three-stage sampling design in which geographical areas were selected at the first stage of sampling was used for NPSAS:87 partly because it was necessary to use local sources at that time to construct sufficiently complete institutional sampling frames. The first-stage sample areas selected for NPSAS:87 were retained for NPSAS:90. However, the 1990-91 IPEDS Institutional Characteristics (IC) file was believed to provide essentially complete coverage of the NPSAS:93 target population. Therefore, the feasibility of eliminating one stage of sampling by selecting institutions at the first stage was investigated.

Eliminating one stage of sampling would reduce sample clustering and thereby improve the precision of survey statistics for a given sample size. However, it could also increase the cost of data collection by virtue of increased travel costs to abstract student data at sample institutions. Therefore, the evaluation of two-stage versus three-stage sampling for NPSAS:93 focused on cost effectiveness.

Conducting this evaluation required first constructing a comprehensive institutional sampling frame from the IPEDS IC file, from which a first-stage sample of institutions could be selected.

2.1.1 Constructing the Institutional Sampling Frame

Nearly all postsecondary institutions in the 50 States, the District of Columbia, and Puerto Rico belong to the target population for NPSAS:93. However, to be eligible for NPSAS:93 an institution was required to satisfy all the conditions listed in Figure 2.1. Institutions serving postsecondary students that were not eligible for NPSAS:93 included those that:

- Provided only avocational, recreational, or remedial courses;
- Offered only in-house courses for their own employees;
- Offered only correspondence courses; or
- Offered only courses requiring less than 3 months or 300 clock hours of instruction, such as some driver training schools, real estate schools, and tax preparation schools.

In addition, U.S. Service Academies were classified as ineligible because of their unique funding/tuition base, as had been done for both NPSAS:87 and NPSAS:90.

Figure 2.1 Institutions Eligible for NPSAS:93

To be eligible for NPSAS:93 an institution was required to satisfy all the following conditions during the 1992-93 academic year:

- Offered an education program designed for persons who have completed secondary education;
- Offered an academically, occupationally, or vocationally oriented program of study;
- Offered courses to students not employed by the institution;
- Offered more than just correspondence courses;
- Offered at least one program requiring at least 3 months or 300 clock hours of instruction; and
- Was located in one of the 50 States, the District of Columbia, or Puerto Rico.

Since the IPEDS IC file was used to create the institutional sampling frame, each record on the IPEDS file was considered to define a separate institution. Hence, each campus in a multi-campus state university system was generally considered to be a separate institution. Likewise, if a law or medical college on a university campus had its own separate IPEDS identification number, the law or medical college was treated as a separate institution.

The 1990-91 IPEDS Institutional Characteristics (IC) file contained 10,287 records. Records that were identified on the IC file as not representing eligible institutions were deleted: 123 central offices, 10 U.S. Service Academies, and 9 institutions outside the geographic target area. Five other institutions were deleted as ineligible based on telephone calls to the schools regarding discrepancies in the IPEDS enrollment data. After deleting these 147 records, the NPSAS institution-level sampling frame contained 10,140 records.

The 10,140 institutions on the NPSAS:93 frame were first stratified as 4-year, 2-year, or less-than-2-year institutions based primarily on the LEVEL variable from the IC file. However, three institutions were re-classified as 4-year institutions. The IC file showed that these institutions had graduate students enrolled. Moreover, a telephone call to the third school regarding discrepant enrollment data confirmed that this school enrolls graduate students. The SECTOR variable was used to determine if these schools were public or private institutions, and the highest level of offering was assumed to be Master's.

The 4-year institutions were stratified into the following four categories based primarily on the IC variables "first-professional offering" and "highest level of offering."

1. first-professional,

2. doctoral,

3. master's, and

4. bachelor's.

When the data for highest level of offering were missing on the IC file, professional judgement was used to make the stratum assignment based on the unduplicated enrollment data and the institution name. Institutions were assigned to these strata in a hierarchical manner. Thus, all institutions that awarded first-professional degrees were placed in the first-professional stratum; all remaining institutions that awarded doctoral degrees were placed in the doctoral stratum; etc.

The eight strata formed for 4-year institutions by crossing institutional control with the above four levels of offering were further subdivided into high and low proportions of baccalaureate degrees awarded in education based on the 1989-90 IPEDS Completions file. The "high education" substrata were designed to contain approximately 20 percent of the institutions in each stratum. Operationally, they were defined to be those institutions for which the proportion of baccalaureate degrees that were awarded in education exceeded the following thresholds.

Stratum	Threshold
Public, first-professional	0.15
Private, first-professional	0.00
Public, doctoral	0.15
Private, doctoral	0.00
Public, master's	0.25
Private, master's	0.25
Public, bachelor's	0.25
Private, bachelor's	0.25

Thus, for example, public, first-professional institutions were classified into the high education substratum if over 15 percent of the baccalaureate degrees awarded were in education. However, private, first-professional institutions were classified into the high

education substratum if any baccalaureate degrees were awarded in education. Institutions for which the 1989-90 Completions file contained no data for the number of degrees awarded in education, including institutions missing from the Completions file, were treated as if they had no degrees awarded in education. The absolute number of degrees awarded in education was not a criterion for forming the strata because the sample yield from a fixed number of sample students per institution depends only on the proportion of baccalaureate degrees in education, not on the absolute number of education degrees.

Having completed this stratification, seven of the strata for 4-year institutions contained mostly large institutions and nine contained mostly small institutions. To achieve a more efficient sampling frame, eight small institutions were moved from large institution strata to small institution strata. In particular, the following changes in stratification were implemented:

(1) one small institution was moved from "public, 4-year, first-professional, high education" to "private, 4-year, first-professional, low education;"

(2) two small institutions were moved from "public, 4-year, first-professional, low education" to "private, 4-year, first-professional, low education;" and

(3) five small institutions were moved from "public, 4-year, master's, low education" to "private, 4-year, master's, low education."

Knowing that the stratum assignments are all imperfect and that analysis domains must be based on data collected in the survey, not on the sampling strata, these few reclassifications to achieve more homogeneous institution sizes within strata was preferable to creating additional strata for small institutions.

The resulting strata are summarized in Table 2.1 for the final institutional sampling frame constructed to test the cost-effectiveness of selecting institutions at the first stage of sampling.

2.1.2 Comparing Cost Effectiveness

After creating the institutional sampling frame, ten hypothetical NPSAS:93 samples of institutions were selected. The institutions were selected with probabilities proportional to the following measure of the size[1] for the i-th institution:

[1]This measure of size is not identical to that used for the final sample of institutions, but the effect is negligible.

$$S_1(i) = GRCNT + 1.7\ UNCNT + 3.7\ BACNT + 4.5\ FPCNT\ , \qquad (1)$$

where GRCNT = number of graduate students,
UGCNT = number of undergraduate students, excluding baccalaureate recipients,
BACNT = number of baccalaureate degree recipients, and
FPCNT = number of first-professional students

based on the IPEDS IC and Completions files.

A sample of 1,520 institutions was allocated to the 22 institutional sampling strata as shown in Table 2.2. This allocation was designed to facilitate approximately equal overall probabilities of selection for students within institutional level: 4-year, 2-year, or less-than-2-year.

Multiple selections of institutions were not allowed because doubling or tripling the sample size at an institution to compensate for multiple selections at the first stage was considered undesirable. Therefore, all institutions with an expected frequency of selection greater than one (determined iteratively) were designed as certainty selections, as shown in Table 2.2.

The institutions in the ten hypothetical samples were located in from 340 to 345 of the 362 area frame primary sampling units (PSUs) defined for NPSAS:90. Thus, sample institutions were widely dispersed across the entire target area (the 50 States, D.C., and Puerto Rico). In contrast, NPSAS:90 had been restricted to 173 of these PSUs. Therefore, the three-stage sampling procedure would produce major cost savings by greatly reducing the number of areas to which field staff would have to travel to abstract student records, and a three-stage design in which geographic areas were selected at the first stage was implemented for NPSAS:93 in much the same way that three-stage samples were implemented for NPSAS:87 and NPSAS:90.

Table 2.1 NPSAS:93 Institutional Sampling Frame

Institutional Stratum	Number of Institutions
Total	10,140
1. Public, 4-year, first-professional, high education[a]	23
2. Public, 4-year, first-professional, low education	126
3. Private, 4-year, first-professional, high education[b]	112
4. Private, 4-year, first-professional, low education	400
5. Public, 4-year, doctoral, high education[a]	28
6. Public, 4-year, doctoral, low education	58
7. Private, 4-year, doctoral, high education[b]	29
8. Private, 4-year, doctoral, low education	110
9. Public, 4-year, masters, high education[c]	56
10. Public, 4-year, masters, low education	204
11. Private, 4-year, masters, high education[c]	43
12. Private, 4-year, masters, low education	509
13. Public, 4-year, bachelors, high education[c]	22
14. Public, 4-year, bachelors, low education	89
15. Private, 4-year, bachelors, high education[c]	71
16. Private, 4-year, bachelors, low education	715
17. Public, 2-year	1,215
18. Private, not-for-profit, 2-year	629
19. Private, for-profit, 2-year	844
20. Public, less-than-2-year	279
21. Private, not-for-profit, less-than-2-year	360
22. Private, for-profit, less-than-2-year	4,218

[a]More than 15 percent of baccalaureate degrees awarded in education.
[b]Any baccalaureate degrees awarded in education.
[c]More than 25 percent of baccalaureate degrees awarded in education.

Table 2.2 NPSAS:93 Institutional Sample Allocation for Hypothetical First-Stage Samples of Institutions

Institutional Stratum	Frame Count	No. Sample Institutions		
		Certainty	Sample	Total
Total	10,140	408	1,112	1,520
1. Public, 4-year, first-prof, high ed[a]	23	5	11	16
2. Public, 4-year, first-prof, low ed	126	85	15	100
3. Private, 4-year, first-prof, high ed[b]	112	40	35	75
4. Private, 4-year, first-prof, low ed	400	26	61	87
5. Public, 4-year, doctoral, high ed[a]	28	5	13	18
6. Public, 4-year, doctoral, low ed	58	15	21	36
7. Private, 4-year, doctoral, high ed[b]	29	18	7	25
8. Private, 4-year, doctoral, low ed	110	6	13	19
9. Public, 4-year, masters, high ed[c]	56	7	19	26
10. Public, 4-year, masters, low ed	204	48	83	131
11. Private, 4-year, masters, high ed[c]	43	2	10	12
12. Private, 4-year, masters, low ed	509	38	142	180
13. Public, 4-year, bachelors, high ed[c]	22	1	9	10
14. Public, 4-year, bachelors, low ed	89	24	34	58
15. Private, 4-year, bachelors, high ed[c]	71	0	14	14
16. Private, 4-year, bachelors, low ed	715	6	117	123
17. Public, 2-year	1,215	29	221	250
18. Private, not-for-profit, 2-year	629	0	6	6
19. Private, for-profit, 2-year	844	2	17	19
20. Public, less-than-2-year	279	24	46	70
21. Private, not-for-profit, less-than-2-year	360	10	22	32
22. Private, for-profit, less-than-2-year	4,218	17	196	213

[a]More than 15 percent of baccalaureate degrees awarded in education.
[b]Any baccalaureate degrees awarded in education.
[c]More than 25 percent of baccalaureate degrees awarded in education.

2.2 Area Sampling Design

2.2.1 Area Frame Construction

Three-digit postal ZIP code areas were used as the basis for creating primary sampling units (PSUs) for NPSAS:93. Initially, PSUs were defined for probability sampling as geographically compact areas that did not cross State boundaries and were as nearly equal in size (student enrollment) as possible. Ultimately, some PSUs containing large institutions were defined to be certainty selections and were expanded in geographic extent without regard to the total measure of size.

Defining the geographic areas or PSUs to be of nearly equal sizes was an important goal to ensure statistical efficiency. This was especially important for NPSAS:93 because the design for selecting sample institutions was technically a two-phase sampling procedure, rather than a two-stage sampling procedure (i.e., a clustered sample of institutions was selected, but these institutions were not sampled independently within the selected geographic areas). The process was two-phase because after geographic areas (PSUs) had been selected, the set of all institutions in the sample PSUs were combined into a single frame for selecting a second-phase sample of institutions. A two-stage sampling procedure would have required selecting an independent sample of institutions within each sample PSU or geographic area. The two-phase sampling procedure was adopted for NPSAS:93 (as it had been for the previous NPSAS studies) because it facilitates using the 22 institutional strata shown in Table 2.1. However, two-phase sampling has some disadvantages. First, variance estimation problems arise if some sample PSUs contain no responding institutions. However, this situation did not occur for NPSAS:93. A second disadvantage is additional variability in the probabilities of selection for institutions because the probability of selecting an institution is the product of the probability of selecting the area in the first-phase sample and the probability of selecting the institution in the second-phase sample. In order to minimize the potential loss of precision because of unequal probabilities of selection, PSUs were constructed to have approximately equal measures of size. Hence, the sample of PSUs, selected with probabilities proportional to size, was an approximately equal probability sample of PSU areas.

Postal ZIP-code maps were used to combine adjacent three-digit ZIPs within states, as necessary, to create PSUs that were geographically compact and had measures of size that were generally in the range from 60,000 to 100,000. The measure of size for each PSU was the sum of the institution measures of size given by (1) for all the institutions located in the PSU on the IPEDS IC file. Three-digit ZIPs that had large measures of size (e.g., over 100,000) were generally subdivided into smaller PSUs, occasionally allowing a single large institution to be a PSU, so that approximately 80 percent of the PSUs had measures of size from 60,000 to 100,000. Subdividing large three-digit ZIPs helped to achieve the goal of creating PSUs with nearly equal measures of size without compromising the geographical compactness of the PSUs.

At the conclusion of this process of creating PSUs of nearly equal sizes, 398 area frame PSUs covering the 50 States, D.C., and Puerto Rico were defined.

Because the PSUs were defined with approximately equal measures of size, selecting PSUs with probabilities proportional to size did not result in any certainty selections. However, the desired sample sizes for institutional strata, shown in Table 2.2, could be achieved within the sample PSUs only if something on the order of 300 of the 398 PSUs were selected. The travel costs that would result from data collection in such a large number of PSUs was considered to be prohibitive. Several strata that contained mostly large institutions yielded few sample institutions. Therefore, the PSUs containing the largest institutions were defined to be certainty PSUs and increased in geographical extent. By stratum, the size measure thresholds used to define certainty PSUs were as follows.

Stratum	Threshold
1	35,000
2	42,500
3	50,000
5	42,500
6	42,500
9	42,500
10	42,500
13	10,000

The geographical boundaries of all certainty PSUs were reviewed. Because having equal measures of size was not important for certainty PSUs, they were combined with neighboring PSUs whenever that was possible without greatly expanding the geographical size of the PSU.

The final area sampling frame contained 291 PSUs, of which 86 were certainty PSUs and the remaining 205 were non-certainty PSUs. Technically, the set of all certainty PSUs was a stratum from which a two-stage sample of students was selected. That is, selection of sample institutions was the first stage of probability sampling within the certainty PSUs. A first-phase sample of 90 PSUs was selected from the 205 non-certainty PSUs, and sample students were selected within the second-phase sample institutions. The latter design for the non-certainty institutions will be referred to as a three-stage design hereafter to simplify the terminology.

2.2.2 Selecting Sample Areas

The final NPSAS:93 sampling design was based on the 86 certainty PSUs and a sample of 90 of the 205 non-certainty PSUs. Thus, data were collected within 176 of the 291 area frame PSUs. The 90 sample PSUs were selected from the 205 non-certainty PSUs with probabilities proportional to size (pps) using a sequential, probability minimum replacement (pmr) sampling algorithm (Chromy, 1979). The sample was implicitly stratified by OBE Region, state within Region, and measure of size within state by sorting the frame units. PSUs in Alaska and Hawaii were placed in Region 9 (outside the coterminous states), and

Puerto Rico was placed in Region 5 (South). Sequential selection from an ordered frame was used to facilitate variance estimation using either replication methods or Taylor series methods.

2.3 Primary Sample of Institutions

The IPEDS-based sampling frame, developed as described in Section 2.1.1, was subset to those institutions located in the 86 certainty PSUs and the 90 sample PSUs. As a result of the editing performed for the supplemental sampling frame, described in Section 2.4, some additional frame cleaning was performed on the IPEDS frame among the 176 survey PSUs. One entry was deleted because it matched an entry on the OPE-IDS file that was flagged as a closed institution and because the telephone number listed in both files was non-working. Three other entries identified as representing only administrative offices were deleted. In addition, some duplicate entries in the IPEDS IC file were identified by printing sets of records that had the same institutional telephone number. Thirteen pairs of institutions having the same name, address, and telephone number were identified, and one member of each pair was deleted from the frame.

Allocation of the institutional sample to the strata shown in Table 2.1 was developed to achieve approximately equal overall student-level sampling rates within level of institution (4-year, 2-year, and less-than-2-year) while achieving NCES' student sample size requirements for institutional strata and achieving average cluster sizes ranging from about 30 responding students in the institutional strata with the smallest institutions (e.g., less-than-2-year institutions) to about 150 responding students within the institutional strata with the largest institutions (e.g., public, 4-year institutions). The resulting allocation of the institutional sample to the 22 institutional strata is shown in Table 2.3 for both the 86 certainty PSUs and the 90 sample PSUs. This table also presents the partition of the sample between the primary sample selected from the IPEDS-based frame and the supplemental sample of 22 institutions selected from the Office of Postsecondary Education's Institutional Data System (OPE-IDS) file.

Sample institutions were selected from the IPEDS-based frame with probabilities proportional to size. The measure of size used for each institution was proportional to the expected sample allocation for the institution, i.e.,

$$S^{*}(j) = \sum_{k} f_k N_{jk} \qquad (2)$$

where f_k is the overall population sampling rate for student stratum "k" and N_{jk} is the number of students in institution "j" that belong to stratum "k." The desired sample sizes for the four types of students being selected from 4-year institutions were used to set the overall population sampling rates, f_k, as follows.

Student Stratum	Frame Total	Sample Size	Sampling Rate
Baccalaureate degree recipients	1,122,673	16,191	1.44%
Other undergraduate students	7,220,372	26,417	0.37%
Graduate students	2,322,286	9,000	0.39%
First-professional students	317,846	5,500	1.73%

Scaling up by multiplying by the lowest sampling rate, that for other undergraduate students, the measure of size for each 4-year institution was calculated as:

$$S_2(j) = UGCNT + 1.1\ GRCNT + 3.9\ BACNT + 4.7\ FPCNT\ . \qquad (3)$$

The measure of size for each less-than-4-year institution was simply its total unduplicated annual (undergraduate) enrollment.

An independent sample of institutions was selected from the institutions located in the 86 certainty PSUs and from those located in the 90 sample PSUs using the sample sizes shown for the 22 institutional strata in Table 2.3. In each case, the sample institutions were selected with probabilities proportional to size (pps) using the same sequential, probability minimum replacement (pmr) sampling algorithm used to select the first-stage sample (Chromy, 1979). The samples were implicitly stratified by OBE Region, state, PSU, and measure of size by sorting the frame units within the 22 institutional strata. Institutions in Alaska and Hawaii were placed in Region 9, and Puerto Rico was placed in Region 5 (South). Within the set of certainty PSUs, sequential selection from an ordered frame was necessary to facilitate replication-based and Taylor series variance approximations because institutions were the first stage of probability sampling in the certainty PSUs.

Institutions for which the expected frequency of selection exceeded one (determined iteratively) were designated as certainty selections. The resulting partition into certainty and non-certainty sample institutions is shown in Table 2.4 for both the 86 certainty PSUs and the 90 sample PSUs.

Table 2.3 NPSAS:93 Allocation of the Total Institutional Sample to the 86 Certainty PSUs and 90 Sample PSUs

Institutional Stratum	86 Certainty PSUs		90 Sample PSUs		Total Sample Institutions
	IPEDS Sample	OPE-IDS Sample	IPEDS Sample	OPE-IDS Sample	
Total	721	9	643	13	1,386
1. Public, 4-year, first-prof, high ed[a]	10	0	6	0	16
2. Public, 4-year, first-prof, low ed	82	1	17	0	100
3. Private, 4-year, first-prof, high ed[b]	50	0	25	0	75
4. Private, 4-year, first-prof, low ed	53	0	26	0	79
5. Public, 4-year, doctoral, high ed[a]	10	0	4	0	14
6. Public, 4-year, doctoral, low ed	23	0	18	0	41
7. Private, 4-year, doctoral, high ed[b]	13	0	6	0	19
8. Private, 4-year, doctoral, low ed	7	0	8	0	15
9. Public, 4-year, masters, high ed[c]	6	0	19	0	25
10. Public, 4-year, masters, low ed	50	0	73	0	123
11. Private, 4-year, masters, high ed[c]	4	0	8	0	12
12. Private, 4-year, masters, low ed	63	0	64	0	127
13. Public, 4-year, bachelors, high ed[c]	3	0	8	0	11
14. Public, 4-year, bachelors, low ed	13	0	23	0	36
15. Private, 4-year, bachelors, high ed[c]	3	0	9	0	12
16. Private, 4-year, bachelors, low ed	30	0	49	0	79
17. Public, 2-year	98	2	113	2	215
18. Private, not-for-profit, 2-year	12	0	11	0	23
19. Private, for-profit, 2-year	27	1	20	0	48
20. Public, less-than-2-year	28	0	17	9	54
21. Private, not-for-profit, less-than-2-year	28	1	16	0	45
22. Private, for-profit, less-than-2-year	108	4	103	2	217

[a]More than 15 percent of baccalaureate degrees awarded in education.
[b]Any baccalaureate degrees awarded in education.
[c]More than 25 percent of baccalaureate degrees awarded in education.

2.4 Supplemental Sample of Institutions

2.4.1 Frame Construction

Although the IPEDS frame provided good coverage of the population of postsecondary institutions, NCES felt that the coverage could be improved by selecting a supplemental sample from the Office of Postsecondary Education's Institutional Data System (OPE-IDS) file of institutions participating in the Pell and Stafford student aid programs as of April 15, 1992. Each institution in the OPE-IDS file was identified as either a main campus or a branch campus (RECTYPE = M or B) and had a unique identification number (OPEID). In addition, if the NCES staff could identify the institution in the April 1992 IPEDS Institutional Characteristics (IC) file, the institution was assigned the matching institution's IPEDS ID number (although some matches were flagged as uncertain). In some cases, multiple OPE-IDS records (e.g., multiple branches) were assigned the same IPEDS ID number. NCES assigned all other institutions "dummy" IPEDS ID numbers beginning with double-zero (00).

The first step in processing the OPE-IDS file was to subset to those institutions located in the 176 survey PSUs (86 certainty and 90 sample PSUs), based on ZIP codes. Institutions that had been assigned IPEDS ID numbers that matched those on the primary IPEDS-based sampling frame for NPSAS:93 were then deleted.

Telephone calls were placed to some of the larger branch campuses with no match in the IPEDS file to determine if they had their own registrar's office. Institutions that reported having their own registrar's office from which a separate list of students could be obtained were re-classified as main campuses. In the process, six closed or ineligible institutions were identified and deleted from the sampling frame.

The remaining branch campuses (those not re-classified as main campuses) that did not match the current IPEDS IC file (had IPEDS IDs beginning with 00) were deleted. When a main campus was selected into the supplemental sample, the associated branch campuses that had been deleted from the frame were included in the sample with the main campus. Therefore, these deletions had no effect on the completeness of the frame.

The branch campuses that had been assigned real IPEDS ID numbers were retained on the sampling frame. The fact that a campus was assigned a real IPEDS ID number was interpreted as meaning that it had its own separate registrar's office. In retrospect, deleting all the branch campuses may have been a better strategy. Sets of branch campuses were sometimes all assigned the same IPEDS ID number, suggesting that they were covered by a single IPEDS record, possibly a main campus record. It might have been simpler to always include the branches with the main campuses for samples selected from the OPE-IDS file.

Table 2.4 NPSAS:93 Allocation of the Primary Institutional Sample to the 86 Certainty PSUs and 90 Sample PSUs

Institutional Stratum	86 Certainty PSUs			90 Sample PSUs			IPEDS Total Sample Institutions
	IPEDS Frame	Certainty Selections	Non-Certainty	IPEDS Frame	Certainty Selections	Non-Certainty	
Total	4,639	301	420	2,716	286	357	1,364
1. Public, 4-year, first-prof, high ed[a]	10	10	0	6	6	0	16
2. Public, 4-year, first-prof, low ed	82	82	0	29	4	13	99
3. Private, 4-year, first-prof, high ed[b]	58	42	8	25	25	0	75
4. Private, 4-year, first-prof, low ed	260	16	37	64	8	18	79
5. Public, 4-year, doctoral, high ed[a]	10	10	0	4	4	0	14
6. Public, 4-year, doctoral, low ed	23	23	0	20	16	2	41
7. Private, 4-year, doctoral, high ed[b]	19	6	7	7	5	1	19
8. Private, 4-year, doctoral, low ed	72	0	7	19	3	5	15
9. Public, 4-year, masters, high ed[c]	6	6	0	19	19	0	25
10. Public, 4-year, masters, low ed	50	50	0	73	73	0	123
11. Private, 4-year, masters, high ed[c]	17	0	4	15	3	5	12
12. Private, 4-year, masters, low ed	269	10	53	104	29	35	127
13. Public, 4-year, bachelors, high ed[c]	3	3	0	8	8	0	11
14. Public, 4-year, bachelors, low ed	31	4	9	25	22	1	36
15. Private, 4-year, bachelors, high ed[c]	18	0	3	23	2	7	12
16. Private, 4-year, bachelors, low ed	319	0	30	181	9	40	79
17. Public, 2-year	383	11	87	380	30	83	211
18. Private, not-for-profit, 2-year	290	0	12	175	1	10	23
19. Private, for profit, 2-year	423	3	24	219	1	19	47
20. Public, less-than-2-year	102	10	18	79	3	14	45
21. Private, not-for-profit, less-than-2-year	221	7	21	79	5	11	44
22. Private, for-profit, less-than-2-year	1,983	8	100	1,162	10	93	211

[a]More than 15 percent of baccalaureate degrees awarded in education.
[b]Any baccalaureate degrees awarded in education.
[c]More than 25 percent of baccalaureate degrees awarded in education.

Because the purpose of the supplemental frame was to provide coverage for institutions not listed on the primary IPEDS-based frame, pairs of records from the two frames that matched on state and telephone number were examined. This resulted in deleting 39 institutions from the supplemental frame that matched on name, address, and telephone number.

The OPE-IDS file contained three variables that provided enrollment data as of the time that the institution became eligible for Title IV student aid: number of students enrolled (a) full-time, (b) at least half-time but less than full-time, and (c) less than half-time. All three variables were missing or zero for approximately half of the institutions on the sampling frame. Nevertheless, using these data to generate measures of size for sample selection was preferable to selecting supplemental institutions with equal probabilities.

Because most institutions on the supplemental frame were small institutions, the list of institutions with missing or zero enrollment was reviewed to identify any that appeared to be major institutions that should not be imputed to be small institutions. Then, the IPEDS-based sampling frame was searched for these "major" institutions; two lists were printed to manually search for matches: (1) all institutions listed as being in the same city, and (2) all institutions listed as being in the same state and having a name beginning with the same first three letters. As a result, seven records were deleted from the supplemental frame.

Missing measures of size (enrollment) were imputed as the first quartiles of the known measures of size within strata defined by institutional level and control, analogous to the strata defined for the IPEDS-based frame. The control variable in the OPE-IDS file (CONT) was missing for only two main campuses. The level variable (INST) was missing for 27 main campuses. Control and level were logically imputed from the names of these institutions. Branch campuses with control or level missing were imputed to have the same control or level as their associated main campus.

At this point, the supplemental OPE-IDS frame contained 34 4-year institutions. Because the primary IPEDS frame was expected to provide nearly complete coverage of the 4-year institutions, the IPEDS frame was searched for matches on these 34 institutions. Two lists were printed to manually search for matches for each institution: (1) all institutions listed as being in the same city, and (2) all institutions listed as being in the same state and having a name beginning with the same first three letters. As a result, thirteen institutions from the supplemental frame were deleted either because they had a direct match to the primary frame or because they were a "branch" (not necessarily flagged as such) for which the registration records were available from the main campus listed on the primary frame. These 13 deletions left 21 4-year institutions on the supplemental frame that appeared to not be covered by the IPEDS IC frame.

Because the supplemental frame contained only 21 4-year institutions, institutional level was collapsed to two levels -- (a) less than 2 years and (b) 2 years or more -- for imputing measures of size. The numbers of institutions with zero or missing enrollment data versus those with positive enrollment data are summarized by level and control below.

Level	Control	Zero or Missing	Positive Enrollment
<2 yr	Public	69	77
<2 yr	Private, not-for-profit	23	16
<2 yr	Private, for-profit	247	187
2+ yr	Public	27	28
2+ yr	Private, not-for-profit	28	38
2+ yr	Private, for-profit	27	15
Total	Total	421	361

Enrollment was zero or missing for over half of the institutions.

Univariate data on total enrollment for the 361 institutions with positive enrollment data were as follows:

Level	Control	Min	Q1	Med	Q3	Max
<2 yr	Public	1	27	45	201	21,923
<2 yr	Private, not-for-profit	2	9.5	23.5	82.5	290
<2 yr	Private, for-profit	3	28	56	144	3,020
2+ yr	Public	3	25	188.5	698.5	42,635
2+ yr	Private, not-for-profit	2	11	20	78	584
2+ yr	Private, for-profit	2	23	71	294	1,653

Using the first quartile as the imputed measure of size for institutions with zero or missing enrollment data in the OPE-IDS file resulted in imputed sizes ranging from 9.5 to 28 students, depending on institutional level and control.

2.4.2 Sample Selection

The supplemental sampling frame was explicitly stratified by whether the institution was located in one of the 86 certainty PSUs or in one of the 90 sample PSUs because selecting institutions was the first stage of probability sampling for institutions located in certainty PSUs. The supplemental sample was selected in "waves" until the requisite number of institutions had been selected. A sample of 22 eligible supplemental institutions was deemed to be sufficient. Only about 11 percent (9 out of 81) of the institutions selected from the supplemental frame for NPSAS:90 were eligible, but the frame cleaning for NPSAS:93 resulted in a much higher proportion of eligible institutions in the supplemental sample for NPSAS:93.

Once measures of size had been defined for all institutions on the supplemental frame, institutions were selected with probabilities proportional to size (pps) using essentially the same procedures described in Section 2.3 for the IPEDS-based frame. In order to allow sampling in waves and preserve overall probabilities proportional to the institutional measures of size, a relatively large initial sample was selected using pps sampling. Equal probability subsamples were then selected for the waves.

Each institution selected for the supplemental sample was checked for a match in the IPEDS frame. This was accomplished by manually inspecting the following two lists for each sample institution: (1) all institutions listed as being in the same city, and (2) all institutions listed as being in the same state and having a name beginning with the same three letters. Matches to the IPEDS frame were ineligible for selection from the OPE-IDS frame and were deleted from the sample.

An initial sample size of 70 institutions was allocated to the certainty and non-certainty PSUs proportional to the size measure totals for these strata. After eliminating seven certainty selections because of matching IPEDS frame records, 16 certainty sample selections were identified.

After identifying the 16 certainty selections, 70 sample institutions were selected: 38 from 488 institutions in certainty PSUs and 32 from 260 institutions in noncertainty PSUs, as shown in Table 2.5. The samples were selected with pps sampling and were stratified implicitly by using a sequential sampling procedure and sorting on level, control, and OPEID. The latter sorting variable was included simply to produce a unique frame ordering. Wave-specific subsamples were selected as simple random samples within the two explicit strata.

Table 2.5 OPE-IDS Sampling Frame After Identifying 16 Certainty Selections

Level	Control	Type of PSU		Total
		Certainty	Non-Certainty	
Total	Total	488	260	748
Less-than-2-year	Public	69	68	137
	Private, not-for-profit	26	13	39
	Private, for-profit	297	127	424
2-year	Public	18	19	37
	Private, not-for-profit	37	18	55
	Private, for-profit	29	9	38
4-year	Public	3	2	5
	Private, not-for-profit	8	3	11
	Private, for-profit	1	1	2

For the first wave, three institutions were randomly selected from each explicit stratum (certainty and noncertainty PSUs) to complete an initial sample of 22 institutions (together with the 16 certainty selections). Matching IPEDS records were not found for any of these six institutions.

Telephone calls were made to administrative officials (primarily registrars) at the 22 sample institutions to determine if they were eligible for participation in NPSAS:93. All 22 schools were determined to be eligible.

2.5 Probabilities of Selection

Let $S_1(h,i,j)$ represent the measure of size for institution "j" in institutional stratum "i" within PSU "h" that was accumulated to define PSU-level measures of size, where

h = 1, 2, ..., 291,
i = 1, 2, ..., 22, and
j = 1, 2, ..., J(h,i).

Moreover, let h = 1,2, ..., 86 denote the certainty PSUs. Then, $S_1(h,i,j)$ is given by[2]

$$S_1(h,i,j) = g(h,i,j) + 1.7\ u(h,i,j) + 3.7\ b(h,i,j) + 4.5\ f(h,i,j) \quad (4)$$

where g, u, b, and f represent the unduplicated graduate, other undergraduate, baccalaureate, and first-professional student counts, respectively, from the IPEDS-based sampling frame. The measure of size for the h-th PSU was then

$$S_1(h,+,+) = \sum_{i=1}^{22} \sum_{j=1}^{J(h,i)} S_1(h,i,j) \ . \quad (5)$$

Because sample PSUs were selected with probabilities proportional to size (pps) with probability minimum replacement (pmr) and none of the PSUs had an expected frequency of selection exceeding one (1.00), the probability of selecting the h-th PSU was

$$\pi_1(h) = \begin{cases} n_1 S_1(h,+,+) \ / \ S_{1,\bar{c}}(+,+,+) & \text{if PSU "h" was not a certainty PSU} \\ 1 & \text{if PSU "h" was a certainty PSU,} \end{cases} \quad (6)$$

This measure of size is not identical to that used for the final sample of institutions, but the effect is negligible.

where n_1 is the number of non-certainty PSUs selected into the sample (n_1=90) and

$$S_{1,\bar{c}}(+,+,+) = \sum_{h=87}^{291} S_1(h,+,+) \ . \tag{7}$$

Among the set of 86 certainty PSUs, institutions were selected with probabilities proportional to size (pps), using the following measure of size,

$$S_2(h,i,j) = u(h,i,j) + 1.1\ g(h,i,j) + 3.9\ b(h,i,j) + 4.7\ f(h,i,j) \ . \tag{8}$$

Institutions for which the expected frequency of selection exceeded one (1.00) were defined to be certainty selections, rather than allowing the possibility of multiple selections, because selecting multiple samples of students within an institution was considerable undesirable. Hence, the probability of selecting the j-th institution in stratum "i" among the set of certainty PSUs was

$$\pi_2(h,i,j) = \begin{cases} n_{2,c}(i)S_2(h,i,j) \ / \ S_{2,c}(+,i,+) & \text{if institution "j" was not a certainty selection for stratum "i"} \\ 1 & \text{if institution "j" was a certainty selection for stratum "i"} \end{cases} \tag{9}$$

where

$$n_{2,c}(i)$$

is the number of noncertainty institutions selected from stratum "i" among the 86 certainty PSUs, as shown in Table 2.4, and

$$S_{2,c}(+,i,+) = \sum_{h=1}^{86} \sum_{j=1}^{J(h,i)} S_2(h,i,j)\ [1 - I_2(h,i,j)] \tag{10}$$

$$I_2(h,i,j) = \begin{cases} 1 & \text{if institution "j" was a certainty selection for stratum "i"} \\ 0 & \text{if institution "j" was not a certainty selection for stratum "i"} \ . \end{cases} \tag{11}$$

Within the set of 90 noncertainty PSUs selected for NPSAS:93, institutions were selected with probabilities proportional to the size measure, $S_2(h,i,j) / \pi_1(h)$. As shown below, dividing the size measure, $S_2(h,i,j)$, by the probability of selecting the PSU, $\pi_1(h)$, resulted in overall institution-level probabilities of selection that were proportional to $S_2(h,i,j)$, comparable to two-stage sampling, even though a two-phase sampling process was implemented.

Institutions for which the expected frequency of selection exceeded one (1.00) were defined to be certainty institutions within the sample PSUs, as they were among the certainty PSUs. Thus, the conditional probability of selecting the j-th institution in stratum "i," given that it was located in one of the 90 sample PSUs, was

$$\pi_2(h,i,j\,|h) = \begin{cases} \dfrac{n_{2,\bar{c}}(i)\ S_2(h,i,j)\ /\ \pi_1(h)}{S_{2,\bar{c}}\ (+,i,+)} & \text{if institution "j" was not a certainty selection for stratum "i"} \\ 1 & \text{if institution "j" was a certainty selection for stratum "i"} \end{cases} \tag{12}$$

where

$$n_{2,\bar{c}}(i)$$

is the number of noncertainty institutions selected from stratum "i" among the 90 noncertainty PSUs as shown in Table 2.4, and

$$S_{2,\bar{c}}(+,i,+) = \sum_{h=87}^{291} I_1(h) \sum_{j=1}^{J(h,i)} [S_2(h,i,j)\ /\ \pi_1(h)]\ [1-I_2(h,i,j)] \tag{13}$$

where

$$I_1(h) = \begin{cases} 1 & \text{if the h-th PSU was a sample PSU} \\ 0 & \text{otherwise .} \end{cases} \tag{14}$$

Therefore, the overall, unconditional probability of selecting the j-th institution from stratum "i" of the IPEDS-based sampling frame was

$$\pi(h,i,j) = \begin{cases} n_{2,\bar{c}}(i)\ S_2(h,i,j) \ /\ S_{2,\bar{c}}(+,i,+) & \text{if institution "j" was a noncertainty selection within a noncertainty PSU} \\ n_{2,c}(i)\ S_2(h,i,j) \ /\ S_{2,c}(+,i,+) & \text{if institution "j" was a noncertainty selection within a certainty PSU} \\ n_1\ S_1(h,+,+) \ /\ S_{1,\bar{c}}(+,+,+) & \text{if institution "j" was a certainty selection within a noncertainty PSU} \\ 1 & \text{if institution "j" was a certainty selection within a certainty PSU.} \end{cases} \quad \textbf{(15)}$$

Thus, if an institution was a noncertainty selection within either a certainty or a noncertainty PSU, the overall, unconditional probability of selection was proportional to the institution's measure of size, $S_2(h,i,j)$, within each institution-level sampling stratum "i."

Sample institutions were also selected from the supplemental OPE-IDS sampling frame with probabilities proportional to size (pps). The formulae for the probabilities of selection are essentially the same as for the selections from the IPEDS-based frame with the following exceptions. First, only two strata were defined: (1) the institutions within the 86 certainty PSUs and (2) the institutions within the 90 sample PSUs. Second, the size measures were computed differently, as discussed in Section 2.4.1. After identifying the 16 certainty institutions, the number of pps selections, $n_{2,c}$, from the 488 institutions in the 86 certainty PSUs was 38, and the number,

$$n_{2,\bar{c}}$$

selected from the 260 institutions in the 90 sample PSUs was 32. Finally, a subsample of three institutions was selected from each of the two strata, resulting in an additional subsampling factor in the formulae for the probabilities of selection.

2.6 Institutional Response Rates

Eligible sample institutions were asked to participate in NPSAS:93 by: (1) providing lists of students for sample selection and (2) abstracting data from student records for sample students. Hence, the potential for institutional nonresponse existed at these two points in the survey process. The subsections that follow examine the occurrence of nonresponse at these two points in the study.

The initial contact with the sampled institutions was a packet of materials sent to the Chief Administrator of each sampled school. Four types of packets were assembled based on

whether the institution had participated in earlier rounds of NPSAS and whether the institution granted the baccalaureate degree. An example of a packet for a new, baccalaureate-granting institution is displayed in Appendix B. The materials asked the Chief Administrator to designate an Institutional Coordinator for further contact. A diagram of the data collection steps appears in Figure 4.2.

2.6.1 Response Rates for Student Sampling Lists

About 100 sample institutions agreed to provide lists of students for sample selection, and continued to say that they would do so each time that they were contacted, but never provided those lists. Hence, the tabulation of the numbers of institutions that agreed to provide student lists for sample selection. Table 2.6 shows that 1,243 of the 1,386 sample institutions were determined to be eligible for NPSAS:93 and that 1,197, or 96.3 percent, of them agreed to provide a list for sample selection. The rate of refusal was greatest among private, for-profit institutions (about 10 percent) and among less-than-2-year institutions (about eight percent), a theme repeated at each stage of data collection.

Table 2.7 shows that 1,098 of the 1,243 eligible sample institutions provided a student list or data base that could be used for sample selection, although another nine institutions provided electronic files that could not be processed. Hence, 88.3 percent of the eligible sample institutions provided lists that could be used for sample selection. The percentage providing student sampling lists ranged from 73.8 percent for private, for-profit, less-than-2-year institutions to 95.3 percent for public institutions with a Masters degree as the highest level of offering.

Weighted response rates were calculated based on the institutional probabilities of selection. The weighted response rates can be interpreted as the estimated percentages of institutions in the population that would have provided a student sampling list, if asked. The overall weighted response rate is 88.2 percent, almost identical to the unweighted response rate (88.3 percent). For some of the institution categories in Table 2.7, there is a considerable difference between the weighted and unweighted response rates. This probably occurs because institutions were selected with probabilities proportional to their measures of size, leading to considerable variation in the institution-level sampling weights.

Table 2.6 Numbers and Percentages of Institutions Promising to Provide Lists or Files for Selecting Sample Students

Type of Institution	Eligible Sample Institutions	Institutions Promising List/File	Unweighted Percent	Weighted Percent
All Institutions	1243	1197	96.3	94.0
Institutional Level:				
Less-than-2-year	200	184	92.0	90.9
2-year	271	264	97.4	95.5
Bachelors	137	133	97.1	98.2
Masters	285	280	98.2	99.3
Doctors	86	86	100.0	100.0
First-professional	264	250	94.7	86.9
Institutional Control:				
Public	624	616	98.7	99.3
Private, not-for-profit	437	417	95.4	96.2
Private, for-profit	182	164	90.1	88.6
Institutional Sector:				
Public, less-than-2-year	50	50	100.0	100.0
Public, 2-year	210	207	98.6	99.1
Public, Bachelors	46	45	97.8	97.8
Public, Masters	148	146	98.6	98.8
Public, Doctors	55	55	100.0	100.0
Public, First-professional	115	113	98.3	98.8
Private, not-for-profit, 2-year or less	43	41	95.3	95.9
Private, not-for-profit, Bachelors	82	79	96.3	97.8
Private, not-for-profit, Masters	133	130	97.7	99.3
Private, not-for-profit, Doctors or First-professional	179	167	93.3	84.5
Private, for-profit, less-than-2-year	130	115	88.5	88.5
Private, for-profit, 2-year or more	52	49	94.2	88.6

Table 2.7 Institution Response Rates for Sample Selection

Type of Institution	Eligible Sample Institutions	Participating Institutions[a]	Unweighted Response Rate	Weighted Response Rate
All Institutions	1243	1098	88.3	88.2
Institutional Level:				
Less-than-2-year	200	153	76.5	82.1
2-year	271	249	91.9	93.4
Bachelors	137	121	88.3	91.2
Masters	285	271	95.1	98.1
Doctors	86	80	93.0	94.6
First-professional	264	224	84.8	74.6
Institutional Control:				
Public	624	576	92.3	96.3
Private, not-for-profit	437	381	87.2	91.3
Private, for-profit	182	141	77.5	80.1
Institutional Sector:				
Public, less-than-2-year	50	43	86.0	98.3
Public, 2-year	210	195	92.9	96.4
Public, Bachelors	46	42	91.3	90.5
Public, Masters	148	141	95.3	95.4
Public, Doctors	55	51	92.7	94.2
Public, First-professional	115	104	90.4	91.7
Private, not-for-profit, 2-year or less	43	36	83.7	89.2
Private, not-for-profit, Bachelors	82	71	86.6	89.8
Private, not-for-profit, Masters	133	126	94.7	98.5
Private, not-for-profit, Doctors or First-professional	179	148	82.7	71.5
Private, for-profit, less-than-2-year	130	96	73.8	78.7
Private, for-profit, 2-year or more	52	45	86.5	86.3

[a]Unreadable electronic files were obtained from nine additional institutions.

CHAPTER 3 STUDENT AND PARENT SAMPLING

3.1 Student Eligibility

The students eligible for NPSAS:93 were those who were enrolled in, or were receiving a baccalaureate degree from, an institution eligible for NPSAS:93 during the 1992-93 academic year. The specific eligibility conditions are delineated in Figure 3.1. However, students enrolled in high school or solely in a GED program were ineligible for NPSAS:93, even if they also satisfied the conditions listed in Figure 3.1. About the only other types of students enrolled in institutions eligible for NPSAS:93 who were not themselves eligible were those enrolled only in avocational or recreational courses or enrolled only in courses of short duration not leading to any degree or other formal award.

Figure 3.1 Students Eligible for NPSAS:93

Students attending an institution eligible for NPSAS:93 who:

- were enrolled in at least one of the following at any time between July 1, 1992 and June 30, 1993:
  - course(s) for credit toward a degree or formal award;
  - degree or formal award program of at least 3 months duration; or
  - an academically, occupationally, or vocationally specific program requiring at least 3 months or 300 clock hours of instruction;

Plus all students who:

- received a baccalaureate degree between July 1, 1992 and June 30, 1993 [Students who completed baccalaureate degree requirements prior to July 1, 1992 but may not have attended classes after July 1, 1992 were eligible].

Note: To facilitate the data collection schedule, enrollment lists included students who were enrolled in any term or course that started on or after May 1, 1992 and started no later than April 30, 1993.

From the standpoint of including all students receiving financial aid funded during the 1992-93 federal financial aid award year, the ideal target population would include all students enrolled in an eligible course of instruction that began between July 1, 1992 and June 30, 1993. However, the survey population was restricted to students enrolled in courses that began between May 1, 1992 and April 30, 1993 to facilitate receiving lists of students for sample selection in the Spring of 1993.

This definition of the survey population provides reasonable comparability with the survey populations for NPSAS:87 and NPSAS:90. Only students enrolled in fall 1986 were sampled for NPSAS:87. Students enrolled on August 1, 1989; October 15, 1989; February 15, 1990; or June 15, 1990 were sampled for NPSAS:90, except that the June 15 enrollees were not sampled for 4-year institutions because of budgetary limitations.

3.2 Student Frame Construction

Each eligible sample institution was asked for a list of all enrolled students who satisfied the eligibility conditions listed in Figure 3.1, excluding students enrolled in high school or solely in a GED program. The institutions were asked to provide, if possible, an unduplicated, machine-readable list of all eligible students in alphabetical order. The institutions were asked to provide for each student:

- full name;
- student identification number;
- most recent educational level (undergraduate, graduate, or first-professional);
- indicator if the student was a candidate to receive a baccalaureate degree between July 1, 1992 and June 30, 1993; and
- major or field of study for baccalaureate candidates.

When institutions were not able to provide unduplicated lists, separate lists of students for each term or course of instruction plus lists of baccalaureate candidates were accepted. When institutions were not able to provide machine-readable files, hard-copy lists were accepted. Significant deviations from the numbers of students expected, based on IPEDS counts, were verified by the schools to ensure the quality of the lists used as student sampling frames.

3.3 Student Sample Selection

The basic student sampling procedure was to select a systematic sample of students at fixed stratum sampling rates from either hard-copy or machine-readable lists of students arranged in alphabetical order within strata. Systematic sampling was used primarily because of its ease of implementation with hard-copy lists. The student sampling rates, rather than the sample sizes, were fixed for each sample institution for three reasons:

(1) to facilitate selecting student samples on a flow basis as lists were received,

(2) to facilitate the procedures used to "unduplicate" the samples selected from hard-copy lists, and

(3) because sampling at a fixed rate based on the overall stratum sampling rate and the institutional probabilities of selection results in approximately equal overall probabilities of selection within the ultimate student strata.

Whenever an institution provided a separate hard-copy list for each term of enrollment or for each course of instruction, the sample was selected in such a manner that each student had a positive probability of selection from only one of the lists provided. The lists were first ordered for processing. If there were separate lists of baccalaureate recipients, those lists were processed first. Otherwise, the generally preferred ordering was: Fall 1992, First

Summer Session 1992, Second Summer Session 1992, and Spring 1993. However, any unique order satisfied the requirement of giving each student only one chance of selection from the institution's lists. A sample was selected at the fixed stratum sampling rate(s) from the first and second lists. The sample selected from the second list was checked against the complete first list, and any members of the sample from the second list that were on the first list were deleted from the sample selected from the second list, thereby "unduplicating" the sample. In the same manner, the sample from each subsequent list was unduplicated against all previous lists. This unduplication procedure guaranteed that any student found on multiple lists could only be selected from one list.

The target numbers of eligible sample students that were to be selected for the NPSAS:93 full-scale study are presented below by type of student. The estimated total number of students of each type in the survey population, based on the 1990-91 IPEDS IC file, and the resulting overall student sampling rates are also presented. The numbers of eligible sample students actually selected are presented for comparison. The observed or actual number of eligible students exceeds the target number for all types of students except first-professional students. This happened because sampling rates were based on conservative estimates of eligibility rates and because the total enrollment in postsecondary institutions increased between the 1990-91 and the 1992-93 academic years. The relationship between target and actual counts is not entirely consistent because of sampling variability.

Type of Student	Frame Total	Target Eligibles	Sampling Rate	Actual Eligibles
Total	22,728,932	77,875	0.34%	79,269
Business major baccalaureates	252,949	1,620	0.64%	
Other baccalaureate recipients	869,656	14,571	1.68%	16,316[1]
Other undergraduates (4-yr)	7,220,372	26,417	0.37%	27,615
Graduate students	2,322,286	9,000	0.39%	10,142
First-professional students	317,846	5,500	1.73%	4,613
2-yr institution enrollees	10,091,424	11,286	0.11%	10,897
< 2-yr institution enrollees	1,654,399	9,481	0.57%	9,686

Table 3.1 presents these target numbers of eligible sample students by the 22 institutional sampling strata for each of the five types of students: (1) business baccalaureate recipients; (2) other baccalaureate recipients; (3) other undergraduates, including enrollees at less-than-4-yr institutions; (4) graduate students; and (5) first-professional students. The student sample sizes needed to achieve this sample allocation are presented in Table 3.2 for 29 student sampling strata defined by institutional stratum and the above five student levels.

[1]Includes business baccalaureate recipients.

Table 3.1 NPSAS:93 Projected Eligible Sample Yield by Type of Student and Institutional Sampling Stratum

Institutional Stratum	Baccalaureate		Other Under-graduates	Graduate Students	First-Prof. Students	Total
	Business	Other				
Total	1,620	14,571	47,184	9,000	5,500	77,875
1. Public, 4-year, first-prof, high ed[a]	62	549	1,155	382	153	2,301
2. Public, 4-year, first-prof, low ed	329	3,598	5,831	2,343	1,847	13,948
3. Private, 4-year, first-prof, high ed[b]	165	1,270	2,250	1,149	1,448	6,282
4. Private, 4-year, first-prof, low ed	19	392	453	490	1,949	3,303
5. Public, 4-year, doctoral, high ed[a]	78	624	1,218	417	1	2,338
6. Public, 4-year, doctoral, low ed	141	1,257	2,344	815	0	4,557
7. Private, 4-year, doctoral, high ed[b]	31	193	300	293	0	817
8. Private, 4-year, doctoral, low ed	6	192	195	238	1	631
9. Public, 4-year, masters, high ed[c]	49	481	1,085	305	0	1,920
10. Public, 4-year, masters, low ed	311	2,363	5,166	1,468	0	9,308
11. Private, 4-year, masters, high ed[c]	16	138	291	55	0	500
12. Private, 4-year, masters, low ed	222	1,486	2,605	982	50	5,345
13. Public, 4-year, bachelors, high ed[c]	19	118	362	1	0	500
14. Public, 4-year, bachelors, low ed	30	727	735	38	0	1,531
15. Private, 4-year, bachelors, high ed[c]	17	140	343	0	0	500
16. Private, 4-year, bachelors, low ed	125	1,043	2,083	23	52	3,326
17. Public, 2-year	.	.	9,036	.	.	9,036
18. Private, not-for-profit, 2-year	.	.	750	.	.	750
19. Private, for-profit, 2-year	.	.	1,500	.	.	1,500
20. Public, less-than-2-year	.	.	1,625	.	.	1,625
21. Private, not-for-profit, less-than-2-year	.	.	1,354	.	.	1,354
22. Private, for-profit, less-than-2-year	.	.	6,502	.	.	6,502

[a]More than 15 percent of baccalaureate degrees awarded in education.
[b]Any baccalaureate degrees awarded in education.
[c]More than 25 percent of baccalaureate degrees awarded in education.

Table 3.2 Student Sampling Strata and Sampling Rates

Student Stratum	Institutional Stratum		Student Level	IPEDS Count	Target Sample Size	Sampling Rate
1.	1-16.	All 4-year	Graduate	2,322,286	9,000	.0039
2.			First-Prof.	317,846	5,500	.0173
3.	1-10.	4-year first-prof, doctoral;	Business BA/BS	185,808	1,190	.0064
4.		Public, 4-year, masters	Other bachelors	649,089	10,920	.0168
5.			Other undergrad.	5,484,957	19,998	.0036
6.	11.	Private, 4-year,	Business BA/BS	1,707	16	.0094
7.		masters, high ed[a]	Other bachelors	5,329	138	.0259
8.			Other undergrad.	51,674	291	.0056
9.	12.	Private, 4-year,	Business BA/BS	36,088	222	.0062
10.		masters, low ed	Other bachelors	86,576	1,486	.0172
11.			Other undergrad.	737,785	2,605	.0035
12.	13.	Public, 4-year,	Business BA/BS	1,419	19	.0127
13.		bachelors, high ed[a]	Other bachelors	3,423	118	.0345
14.			Other undergrad.	51,308	362	.0071
15.	14.	Public, 4-year,	Business BA/BS	5,539	30	.0054
16.		bachelors, low ed	Other bachelors	55,420	727	.0131
17.			Other undergrad.	233,109	735	.0032
18.	15.	Private, 4-year,	Business BA/BS	2,074	17	.0082
19.		bachelors, high ed[a]	Other bachelors	6,181	140	.0227
20.			Other undergrad.	71,013	343	.0048
21.	16.	Private, 4-year,	Business BA/BS	20,314	125	.0062
22.		bachelors, low ed	Other bachelors	63,638	1,043	.0164
23.			Other undergrad.	590,526	2,083	.0035
24.	17.	Public, 2-year	Other undergrad.	9,388,878	9,036	.0010
25.	18.	Private, not-for-profit, 2-year	Other undergrad.	178,924	750	.0042
26.	19.	Private, for-profit, 2-year	Other undergrad.	523,622	1,500	.0029
27.	20.	Public, less-than-2-year	Other undergrad.	369,958	1,625	.0044
28.	21.	Private, not-for-profit, less-than-2-year	Other undergrad.	166,530	1,354	.0081
29.	22.	Private, for-profit, less-than-2-year	Other undergrad.	1,117,911	6,502	.0058

[a]More than 25 percent of baccalaureate degrees awarded in education.

Table 3.2 also presents the resulting overall student sampling rates. The allocation to strata was determined to minimize the differences in overall student sampling rates, subject to the constraint of achieving the sample sizes shown in Table 3.1. Because of unresolved inconsistencies in the IPEDS-based sampling frame, Tables 3.1 and 3.2 show that some first-professional and graduate students were projected to be selected from institutions classified as not offering those levels of instruction.

When determining the student sampling rates, some of the students on the graduation lists received from the sample institutions would not actually receive their baccalaureate degrees during the NPSAS academic year (degrees awarded between July 1, 1992 and June 30, 1993). Based on the NPSAS:93 field test data, we estimated that 93 percent and 2.5 percent of the students selected from the baccalaureate recipient strata and from the other undergraduate stratum, respectively, among 4-year institutions would actually receive their baccalaureate degrees during the NPSAS academic year. Assuming these rates, the numbers of additional baccalaureate recipients from the other undergraduate stratum would more than compensate for losses from the baccalaureate recipient strata because of the much larger sample size for other undergraduates. Therefore, the student sampling rates shown in Table 3.2 were used to select the student samples for the NPSAS:93 full-scale study. However, in the full-scale study the losses due to baccalaureate candidates not receiving their degrees were not completely offset by students sampled as other undergraduate students who received baccalaureate degrees.

The numbers of sample students actually selected are presented in Table 3.3 by the 22 institutional sampling strata for each of the five types of students. The total number of students selected, 82,016, is somewhat greater than the targeted total number of eligible sample students, 77,875, shown in Table 3.1 to compensate for the expected rates of student ineligibility based on the NPSAS:90 experience. Because the stratification information for the 1990-91 IPEDS IC file was not perfect, some baccalaureate recipients were selected from institutions stratified as 2-year or less-than-2-year institutions and that graduate and first-professional students were occasionally selected from institutions classified as not offering those levels of instruction (see Table 3.3). These misclassifications have minor effects on statistical efficiency, but have no effect on the validity of the study. Institutional analysis domains are based on the data collected in the NPSAS:93 study, not on the sample selection strata.

Table 3.3 NPSAS:93 Student Sample Sizes by Type of Student and Institutional Sampling Stratum

Institutional Stratum	Baccalaureate		Other Under-graduates	Graduate Students	First-Prof. Students	Total
	Business	Other				
Total	1,419	15,566	50,501	9,084	5,446	82,016
1. Public, 4-year, first-prof, high ed[a]	53	647	1,130	338	133	2,301
2. Public, 4-year, first-prof, low ed	251	3,741	5,852	2,341	2,191	14,376
3. Private, 4-year, first-prof, high ed[b]	115	1,186	1,765	920	1,170	5,156
4. Private, 4-year, first-prof, low ed	28	558	481	446	1,879	3,392
5. Public, 4-year, doctoral, high ed[a]	56	557	947	328	2	1,890
6. Public, 4-year, doctoral, low ed	106	1,435	2,556	978	0	5,075
7. Private, 4-year, doctoral, high ed[b]	33	240	331	411	1	1,016
8. Private, 4-year, doctoral, low ed	5	234	217	243	0	699
9. Public, 4-year, masters, high ed[c]	35	476	1,221	298	4	2,034
10. Public, 4-year, masters, low ed	289	2,755	6,296	1,724	0	11,064
11. Private, 4-year, masters, high ed[c]	23	208	343	137	0	711
12. Private, 4-year, masters, low ed	201	1,683	2,906	903	66	5,759
13. Public, 4-year, bachelors, high ed[c]	21	151	461	2	0	635
14. Public, 4-year, bachelors, low ed	28	160	943	7	0	1,138
15. Private, 4-year, bachelors, high ed[c]	16	176	388	0	0	580
16. Private, 4-year, bachelors, low ed	159	1,346	2,124	7	0	3,636
17. Public, 2-year	0	1[d]	9,542	0	0	9,543
18. Private, not-for-profit, 2-year	0	0	838	0	0	838
19. Private, for-profit, 2-year	0	0	1,481	0	0	1,481
20. Public, less-than-2-year	0	0	2,055	0	0	2,055
21. Private, not-for-profit, less-than-2-year	0	0	1,351	0	0	1,351
22. Private, for-profit, less-than-2-year	0	12[e]	7,273	1[e]	0	7,286

[a]More than 15 percent of baccalaureate degrees awarded in education.

[b]Any baccalaureate degrees awarded in education.

[c]More than 25 percent of baccalaureate degrees awarded in education.

[d]One institution sampled as a 2-year institution (based on the IPEDS IC file) was determined to be a 4-year institution. It is classified as such in all NPSAS:93 analysis tables.

[e]One institution sampled as a less-than-2-year institution (based on the IPEDS IC file) was determined to be a 4-year institution. It is classified as such in all NPSAS:93 analysis tables.

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3.4 Probabilities of Selection

To define the student sampling rates, let

π_{ij} = the overall probability of selecting for the j-th institution from the i-th institutional stratum (ignoring the area PSU "h"),

n_k = the desired number of eligible sample students to be selected from student stratum "k" (k = 1, 2, ..., 29, as shown in Table 3.2),

N_k = the total number of eligible students in the population for student stratum "k," and

n_{jk} = the number of students selected from the j-th institution for the k-th student sampling stratum.

The overall population sampling rate among eligible students in student stratum "k" is then

$$r_k = n_k / N_k \ . \qquad (16)$$

For the unconditional probability of selection to be a constant, r_k, for all eligible students in stratum k,

$$\frac{n_{jk}}{N_{jk}} \pi_{ij} = r_k \ , \qquad (17)$$

or equivalently,

$$n_{jk} = r_k \frac{N_{jk}}{\pi_{ij}} \ , \qquad (18)$$

where N_{jk} is the number of eligible students in stratum "k" at institution "j." Thus, the conditional sampling rate for stratum "k," given selection of the j-th institution, becomes

$$r_{jk} = r_k / \pi_{ij} \ . \qquad (19)$$

However, in this case, the desired overall student sample size, n_k , is achieved only <u>in expectation</u> over all possible samples.

To achieve the desired sample sizes with equal probabilities within strata in the particular sample that has been selected and simultaneously adjust for institutional nonresponse and ineligibility, then

$$\sum_{j \in R} n_{jk} = n_k \ , \tag{20}$$

where "R" denotes the set of eligible, responding institutions. If the conditional student sampling rate for the k-th stratum in institution "j" is

$$f_{jk} = f_k \ / \ \pi_{ij} \ , \tag{21}$$

then

$$\sum_{j \in R} f_k \ \frac{N_{jk}}{\pi_{ij}} = n_k \ , \tag{22}$$

or equivalently,

$$f_k = n_k \ / \ \hat{N}_k \ , \tag{23}$$

where

$$\hat{N}_k = \sum_{j \in R} N_{jk} \ / \ \pi_{ij} \ . \tag{24}$$

Because it was necessary to set the student sampling rates before complete information on eligibility and response status was obtained, $\hat{N}_k$ was calculated as follows:

$$\hat{N}_k = \sum_{j \in S} \frac{N_{jk}}{\pi_{ij}} \cdot [\, E_i \, R_i \, E_{ik} \,] \quad , \qquad (25)$$

where "S" denotes the set of all 1,386 sample institutions,

E_i = the institutional eligibility factor for institutional stratum "i,"
R_i = the institutional response factor for institutional stratum "i,"
E_{ik} = the student eligibility factor for student stratum "k" within institutional stratum "i."

Using the known institutional probabilities of selection, π_{ij}, and the student sample sizes, n_k, shown for each of the 29 student sampling strata shown in Table 3.2, the sampling rate for student stratum "k" in institution "j" was calculated using eligibility and response rate factors E_i, R_i, and E_{ik}, based on the NPSAS:90 experience, except when an institution's eligibility or response status was already known for NPSAS:93.

The sample was initially allocated as described above. This allocation achieved the desired sample sizes for all student strata with equal weighing allocations to institutions within student strata. However, at least 30 responding students were desired, whenever possible, at each sample institution so that they could be sent a report regarding their students. Such reports are a benefit to the institutions and encourage their participation.

Based on NPSAS:90 student eligibility and response rates, the cluster sizes (within institution sample sizes) needed to achieve 30 respondents were derived by type of institution. The initial sampling rates were then revised to achieve, whenever possible, an expected total sample allocation of at least 40 students for 4-year institutions, 45 students for 2-year institutions, and 50 students for less-than-2-year institutions. When a minimum was imposed for an institution, that was done by multiplying the sampling rates, $\hat{r}_{jk}$, for all five types of students by a fixed constant so that the sampling rates were proportionately increased for all types of students. When the sampling rate for one type of student reached 100 percent without achieving the required minimum expected sample size, the stratum sampling rates were arbitrarily increased, as needed, to achieve the minimum (e.g., setting the rates to 100 percent for all types of students). After the student sampling rates had been set for the institutions with fixed minimum allocations, the allocations for the remaining institutions were recomputed using the original algorithm (achieving equal weighing within strata) based on the reduced sample sizes remaining to be allocated for each of the 29 student sampling strata.

Finally, the overall population sampling rates were used to set non-zero sampling rates for all five types of students for 2-year and less-than-2-year institutions so that positive sampling rates would be available whenever those institutions had been misclassified. Thus, the sampling rates, $\hat{r}_{jk}$, were computed from (18) and (20) using the following sample sizes as n_k for those institutions:

(1) 1,620 business baccalaureate recipients;

(2) 14,571 other baccalaureate recipients;

(3) 9,000 graduate students;

(4) 5,500 first-professional students;

and computing $\hat{N}_k$ by summation over all sample institutions.

As a check on the effect of constraining the sampling rates to produce the above expected minimum student sample sizes, we computed the survey design effects resulting from unequal probabilities of selection for both the initial (unconstrained) and final (constrained) sample allocations for the following analysis domains:

(1) the total sample
(2) baccalaureate recipients at 4-year institutions
(3) all undergraduates (including baccalaureate recipients) at 4-year institutions
(4) graduate students
(5) first-professional students
(6) students at 2-year institutions
(7) students at less-than-2-year institutions.

As shown in Table 3.4, the minimum sample size constraints resulted in very little variance inflation, as measured by the unequal weighting design effect, except among the less-than-2-year institutions.

3.5 Student Sample Quality Control

To help ensure the overall quality of the samples selected, the numbers of students on the lists or files provided by the sample institutions were compared to counts based on the IPEDS files.[2] In addition, lists were checked to make sure that the following information needed to process the sample was received: student name, ID number, level (undergraduate, graduate, first-professional, or baccalaureate candidate), and major for baccalaureate candidates. When major discrepancies were detected, we called the institutions to determine if they had provided lists for all the proper terms of enrollment and for all the different types of students. Figure 3.2 provides an overview of the quality assurance (QA) procedures that we used to determine when a telephone call to a sample institution was necessary.

The tolerance range for the count for each type of student depended on whether or not the corresponding count from the IPEDS files was considered imputed or actual data. Less stringent tolerances for imputed counts were used because they were considered less reliable than reported counts. (Imputation procedures are usually designed to produce correct results only on the average over all possible imputations.)

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[2]The expected numbers of undergraduate, graduate, and first-professional students were based on the 1990-91 IPEDS Institutional Characteristics (IC) file that was used to construct the institutional sampling frame. The expected numbers of baccalaureate recipients were based on the 1990-91 IPEDS Completions file, which was made available for QA purposes immediately before the first student lists were received.

Hard-copy lists were checked prior to sample selection using tolerance ranges that allowed for potentially duplicated counts (e.g., persons appearing on both the Fall and Spring enrollment lists). To help ensure adherence to our sampling procedures, Research Triangle Institute staff checked the sample sizes from hard-copy lists prior to being sent to data entry. These post-sampling checks are summarized in Part II of Figure 3.2.

RTI staff checked machine-readable lists only after they had been unduplicated, and a sample had been selected. If the sample size was outside of the tolerance range and the files provided were determined to be incorrect, the sample was discarded and not used. Otherwise, if the sampling files were determined to be correct, the sample was retained.

All samples (hard-copy and machine-readable) with fewer than 10 students or more than 100 students greater than expected were rejected. RTI staff usually reset the sampling rates for these institutions, unless RTI staff had already selected all eligible students, even when the institutions verified that the lists they had provided were correct.

RTI staff evaluated the QA procedures in early May after about 20 percent of the lists were received. At that time, about 70 percent of the lists received were outside the initial tolerance ranges for at least one type of student and required telephone follow-up with the institutions. However, only about six percent of these institutions reported that the lists they provided were incorrect. Because most of the incorrect lists had student counts which varied dramatically from the IPEDS counts, the QA tolerances were relaxed on May 11, 1993, as shown in Figure 3.2. About two-thirds of the sample was processed using these relaxed QA tolerances.

The QA procedures were evaluated again in early August and found that about 50 percent of the lists were still failing the relaxed tolerance checks. As a result, RTI staff discontinued range checks for imputed IPEDS counts and further relaxed the checks for real IPEDS counts. Approximately 12 percent of the sample was processed using these final relaxed QA procedures.

At the conclusion of the sample selection process, RTI staff selected samples for about 12 institutions based on whatever list RTI staff were able to obtain from the institution, without regard to tolerance intervals.

3.6 Parent Sampling

A survey of the parents of some of the students sampled for NPSAS:93 was conducted to collect supplemental data for use in student-level analyses. Parent-level inferences were not a study objective.

There were two primary objectives that influenced the sample design for the parent survey. The first objective was to provide supplemental data on financing the postsecondary education of the student, focusing on those data elements that were not known from institutional sources and for which the student was not the best source of information. The second objective was to provide more complete family background data for graduating seniors, who form the initial cohort for the Baccalaureate and Beyond (B&B) longitudinal

study. An additional secondary objective was to obtain data that could be used for modelling the impact of changes in parameters that determine who is eligible for financial aid and how much aid is received.

To achieve these objectives the sample design for the parent survey targeted the parents of specific subgroups of students and excluded the parents of other subgroups. The parents of graduate and first-professional students and of all students who were 24 years of age or older were excluded from the parent survey.[3] The parents of all students under 24 years of age who satisfied either of the following conditions were included with certainty:

- the student was a graduating senior, or
- the student was a dependent, undergraduate student for whom the parents' total family income from all sources in 1991 was not available from the CADE abstraction of the student's records.

In addition, the parents of approximately 56 percent of the aided, independent undergraduate students under 24 years of age were included in the parent sample. This sampling rate was intended to produce about 2,000 completed interviews with this group of parents.

Table 3.5 provides more specific information about how the parent sample was implemented.

[3]Reduced from 30 years of age to 24 years of age because of budgetary limitations.

Table 3.5 NPSAS: 93 Parent Sampling Strategy

Age as of 12/31/92[a]	BA/BS Received[b]	Type Degree Program[c]	Dependent[d]	Aided[d]	Key Parent Data Missing[e]	Parent Sample Status
≥24						No
< 24 or missing	Yes					Yes
< 24 or missing	No	Grad. Student				No
< 24 or missing	No	First Prof.				No
< 24 or missing	No	Undergrad.	Yes or missing		Yes	Yes
< 24 or missing	No	Undergrad.	Yes or missing	Yes or missing	No	No
< 24 or missing	No	Undergrad.	No	Yes or missing	Yes	56%
< 24 or missing	No	Undergrad.	No	No		No

[a]Based on M_STDB from the student data abstraction.
[b]Based on BAB from the student data abstraction.
[c]Based on M_C13 from the student data abstraction, or the student sampling stratum when M_C13 was missing.
[d]Based on the student data abstraction.
[e]Based on PRN20 from the student data abstraction.

CHAPTER 4 Institutional Records Data Collection

During the institutional records data collection portion of the survey, data were obtained from student financial aid records and other administrative records maintained by the institutions. The survey design called for institution staff to complete this in as many institutions as practical; when institution staff were unable to complete the task, field staff were sent to the site to complete the institutional records data collection . As described above, software was developed to facilitate this activity. The software was designed to be used by the institution staff, but could be used by field staff as well. The field period was originally scheduled to begin in May of 1993; however, because of delays in obtaining the student sample frame, this task did not begin until late June of 1993 and was not completed in the majority of the institutions until October of 1993.

4.1 Objectives

The purpose of the institutional records collection was to gather student-level data describing each student's periods of enrollment, expected education-related expenses, resources available for financing his or her education, and financial aid that was made available to the student. Also, the NPSAS:93 project needed to obtain locating information in order to conduct the telephone interviews of students and parents. The survey year was defined as July 1, 1992 through June 30, 1993, which corresponds to the 1992-93 award year for federal financial aid.

The primary source of this information consisted of administrative records and documents maintained on a routine basis by institution staff. These included student directories, enrollment files, application forms and output documents, budgets and needs analysis, award letters, and other miscellaneous documents contained in student financial aid folders.

It was necessary to collect locating information so that students and their families could be contacted for the telephone interview portion of the survey. In addition to the student's local address, the institutional records collection software requested a permanent address, the address of the student's parents (if different from the permanent address), and the address of another person who would be knowledgeable of the student's whereabouts.

Detailed information related to student enrollment was collected, including beginning and ending dates of terms of enrollment, type of program (credit hours or clock hours), degree program, student's status (full-time or part-time), and field of study. In institutions where every student followed the same pattern of terms (as in a semester or quarter system), beginning and ending dates of terms were entered once at the institution level and then preloaded into each student's record depending on the terms enrolled. For other institutions where beginning and ending dates of periods of enrollment were not standard for all students, this information was collected on a student-by-student basis. For students in the B&B cohort, expected date of graduation was also requested.

In 1992-93, several companies as well the federal government processed application forms and returned the information to the institutions on an output document. The standard application forms and the corresponding output documents are summarized in Figure 4.1. To facilitate data entry, the output documents were replicated in the design of the institutional records collection [CADE] software.

Figure 4.1: Application Forms and Corresponding Output Documents

Application Form - Publishing/Processing Company	Output Document
Application for Federal Student Aid (AFSA) - U. S. Department of Education	Student Aid Report (SAR)
Financial Aid Form (FAF) - College Scholarship Services	Financial Aid Form Need Analysis Form (FAFNAR)
Family Financial Statement (FFS) - American College Testing	Comprehensive Financial Aid Report (CFAR)
Graduate and Professional School Financial Aid Services Form (GAPSFAS) - GAPSFAS	Graduate and Professional School Financial Aid Services Form (GAPSFAS)

To allocate student aid, institutions must calculate each student's need for aid, defined as the difference between the cost of attendance and expected contribution from the student or family. In 1992-93, two methods of computing the costs of attendance were in general use: Pell Grant Cost of Attendance (Pell Budget) and Congressional Methodology (CM Budget). In addition, institutions can develop their own Institution Budgets, which often follow CM guidelines but employ some variations based on unique needs of the institution.

The amount and type of aid awarded to students are documented in the Award Letter. There is no required format for an award letter. However, these letters typically include the following items:

- Student identification: the student's name, address, social security number, institution identification number;
- Award information: the type and amount of aid being offered, often broken down by enrollment periods; and
- Need analysis information: the student's cost of attendance budget, expected family contribution, financial need before awards, total awards, an remaining unmet need.

In addition, the award letter requires the student to respond either by accepting or rejecting the award by a given deadline. Acceptance or rejection of the award is typically documented in the student file.

4.2 Institutional records collection CADE Design

The institutional records collection software -- computer assisted data entry or CADE -- was designed for use by institution staff in abstracting information from these types of documents. The software had to be compatible with a wide variety of computers that were likely to exist in financial aid offices in 1993. CADE was designed for use with IBM-compatible minicomputers, with a high-density disk drive, and at least 540K of memory. It was necessary to assure institution users that the use of the NPSAS CADE software would not disrupt files already stored on their computers. For this reason, CADE was designed to operate entirely from a disk drive and did not require installation on a hard drive. In addition, all diskettes were scanned for viruses prior to sending them to institutions. Finally, it was necessary to minimize the storage requirements for the data entry software, the list of sample students, and the abstracted data so that users did not have to keep track of multiple diskettes. In fact, in some of the largest institutions, two diskettes were required to transmit the software and data.

CADE was designed to function as a data-entry program and contained many features to assure the quality of data entry. The software routed the user to various sections of CADE based on responses to filter questions. For example, if the user indicated that the student did not accept any aid during the NPSAS year, specific questions about the amount and source of aid were automatically skipped. For most of the items, instructions or explanations appeared in "pop-up" boxes which appeared as the item is presented to the user. These boxes included valid response codes and explanations and provided definitions of terms.

Many questions contained edit specifications that checked the response against either a range of acceptable responses (range checks) or responses to previous items (inter-item consistency checks). Edit check routines in the software presented a question to the user if the response was outside of an expected range or was inconsistent with another response; however, for many items, users could override the edit and enter the unexpected response. This kind of "soft" edit was necessary to account for situations where the actual data in the student's record might be inconsistent with expectations. For example, the expected range of responses for Pell Grant awards was between $200 and $2,400. If the student actually received a grant of $175, the user would be warned: "$175 is outside the expected range. Please check your entry!" However, after checking that the amount was recorded accurately, the user could verify the response and proceed with the data entry.

A few items were deemed so critical to the study that an answer was required in order to continue with the data entry. For example, the question "Was this student awarded any financial aid for terms that began between May 1, 1992 to April 30, 1993" had to be answered as either "Yes" or "No" in order to proceed with data entry. The user could not skip this item.

The first CADE menu presented to the user contains three options for entering either institutional-level information or student-level information or checking on the status of each sampled student.

The Institution Information section of CADE requested information about the sampled institution that would be relevant to all students enrolled in that institution. This information included names and beginning and ending dates of terms of enrollment, whether the institution made separate awards for the summer terms and, if so, the beginning and ending dates of primary and summer terms, and whether courses were measured in terms of credit or clock/contact hours or both systems or some other system. In many institutions, this information was the same for all students in the institution and if this were the case, it was preloaded into the student-level sections to avoid unnecessary duplicative data entry tasks. However, in some institutions, this information could vary from student-to-student and had to be entered separately for each student. The information concerning terms of enrollment was preloaded from the institution receipt control module of the ICS. The data were obtained either from responses to the initial mailout to chief administrators or follow-up calls with chief administrators or NPSAS institutional coordinators.

The second option on the menu presented the user with the student-level portion of the CADE software. At this level, CADE consisted of six modules requesting data on:

- Student Addresses, with fields for up to four names, addresses and telephone numbers (student's local address, permanent address, parent's address, and another address);

- Enrollment during the study year, with fields for dates of enrollment, attendance status (full-time/part-time), credit or clock hours, tuition and fees, type of program degree, student level, program name, and most recent major or field of study (and expected date of graduation, for B&B cohort only);

- Student Characteristics, requesting student gender, race, ethnicity, social security number, high school degree or equivalent, citizenship, admissions test scores, and student's grade point average;

- Financial Aid Award Information, requesting information about amounts and sources of financial aid awarded to the student;

- Need Analysis and Budget, used to record information from the Pell, Congressional Methodology, or institution budgets;

- Financial Aid Application Information, abstracted from the relevant output document completed for the student.

The data requested in each of these modules could exist in any of several locations on the campuses of institutions, for example, address information and enrollment information might reside in the registrar's office and data on awards in the financial aid office. For this reason,

CADE was designed so that each module could be completed for all students at once. Alternatively, if all of the records did reside in one location, the entire CADE questionnaire could be completed on a student-by-student basis. At the opening screen of the student-level section, the user was presented with a list of the sampled students which could be sorted either alphabetically or by the institution's student identification number. The user selected a student and the module of interest. A display also indicated for each student which modules had been fully or partially completed and which remained empty. This indicator was a useful reminder for the user in keeping track of modules completed on each student.

The Status Monitor section of CADE served a similar purpose. This section presented a summary in percentages of eligible students with complete or partially complete records and indicated what percentage of eligible students were missing key information such as telephone numbers and financial aid awards. A function in the Status Monitor allowed the user to flag a student as ineligible for the study, as might happen when a student dropped out of the institution before attending any classes during the study year.

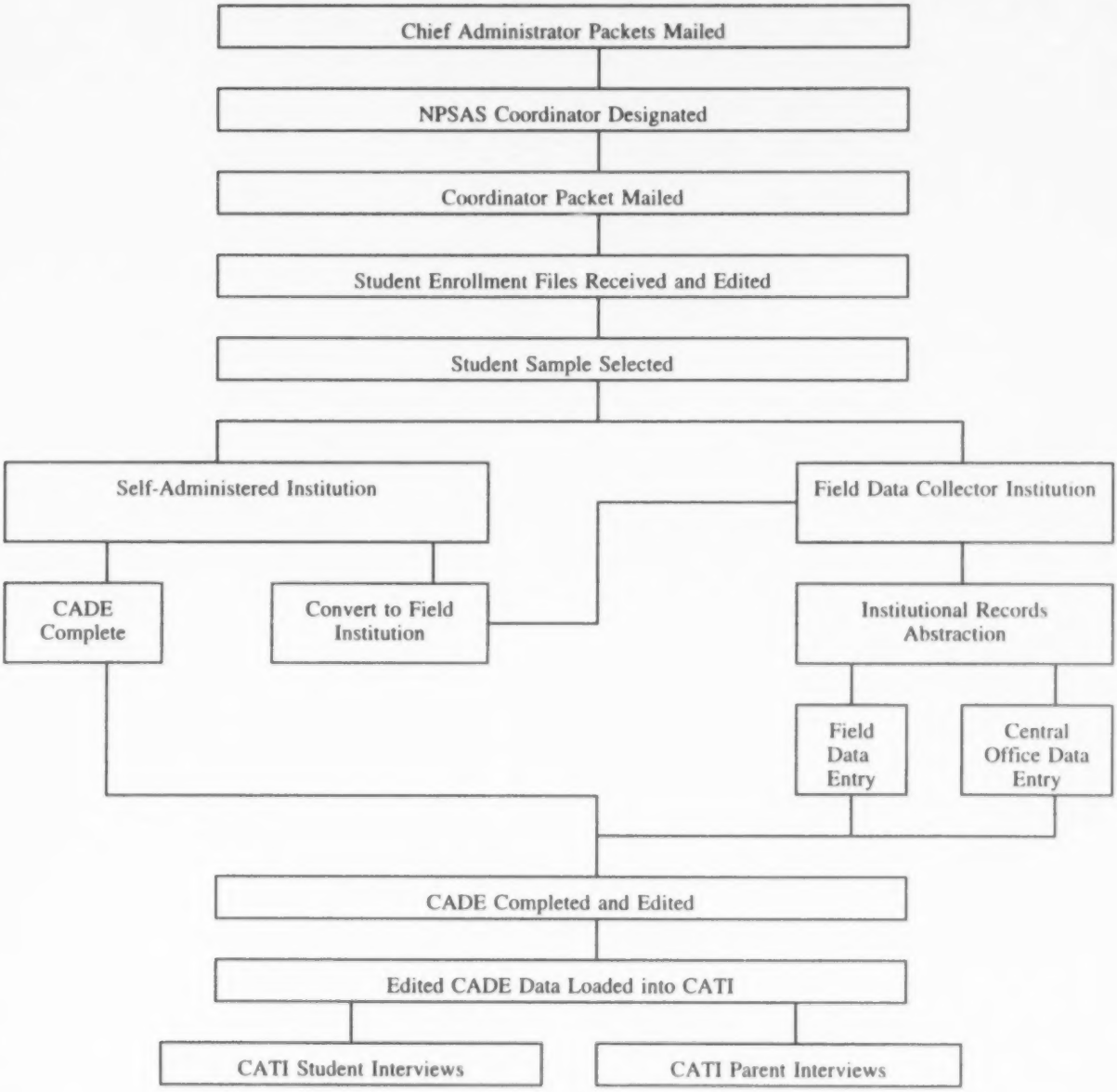
A list of CADE data elements appears in Appendix A.

4.3 Institution Data Collection

As described above, the CADE was designed for use by institutional staff in abstracting information from student records. In 483 of the 1,078 institutions that supplied CADE data (45%), this was the method of CADE institutional records collection ion. In these institutions, the tasks recruiting the institutions and institutional coordinators, instructing them in the use of CADE, and providing technical support during the records abstraction were all handled by mail or telephone. At the close of the institutional records collection task, the institutional coordinator sent the completed CADE diskette to the central office. Receipt control and quality control of this effort are described below in section 4.4. Of the remaining institutions, 512 (47%) required a visit from field staff to complete the institutional records collection and 83 (8%) were completed by abstracting in the central office copies of student records supplied by institutions (Figure 4.2).

Field data collectors -- specially trained field staff -- completed the records abstraction task using CADE on laptop computers. The self-administered CADE sent to institutions on diskettes and the field data collector CADE used with laptops were identical. In addition to CADE, the laptops contained communications software that allowed field data collectors to transfer files electronically using password-protected compressed files sent over telephone lines to the central office. Compatible software in the "host" computer in the central office received files, created institution-level directories, stored the files by institution, and read information from the status monitor into the receipt control system to automatically update the status of records collection at each institution.

Figure 4.2 NPSAS:93 Institution Data Collection



4.3.1 Field Manager Recruitment and Training

Because so much depended on the collection of institutional data, recruiting proficient field managers was a critical task. Abt and RTI reviewed their combined networks of experienced, proven field staff to identify individuals who had the skills necessary to facilitate a high response rate in the data collection task.

Field managers were selected based on their experience with studies involving institutions, particularly educational institutions, and for their capacity to achieve demanding quality standards for data collection while at the same time maintain efficient operations; the ability to control costs and hours per case was an important factor in the selection process. Field managers needed to know how to trouble-shoot difficulties that emerged in the data collection process; they had to quickly resolve problems related to securing the cooperation of institutions. Field managers were responsible for helping the field interviewers navigate the institution's labyrinth in which the student information was stored, in order to retrieve the required. The field managers were the liaison between the interviewers and the technical staff in the central office, so they had to be able to develop solutions to problems interviewers had while learning how to use laptop computers and the CADE system. The field managers played an important part in recruiting and training their own interviewer staff, so field manager candidates were judged on their ability to select and train interviewers.

A manual for the field managers was developed. The manual covered all the manager's responsibilities and dealt with the specifics of data collection operations. The manual explored topics such as gaining cooperation, institutional records abstracting, reporting procedures and professionalism. One chapter dealt with the CADE system, featuring a series of practice exercises. The manual served as a framework for the training program that prepared field managers for their role.

A four-day training session was conducted for all the field managers from RTI and Abt to assure consistent training across both firms. This session provided a foundation for the institutional records collection phase of the study. Because the field managers received all the training that was to be given to the field interviewers, the manager training also served as a pilot test of the interviewer training.

The session generated enthusiasm for the study among the field managers. They were introduced to NPSAS and its purpose, and their responsibilities for making the study work. They were grounded in the elements of financial aid at the postsecondary level. Field managers were thoroughly schooled in the job of the field interviewers, so they could understand the interviewers' tasks and help them resolve problems and overcome obstacles presented in the course of the study.

Learning the CADE program for data collection was a central focus of the training. Much of the training was devoted to practice using the software, in exercises involving realistic simulations of the situations that the interviewers were expected to encounter. These simulations, exercises developed by staff from the National Association of Student Financial

Aid Administrators (NASFAA), used the different sources and formats of student data (such as financial aid forms, enrollment rosters and transcripts) and included all phases of the data collection process, from preloading the institutional data to transmitting a completed data set to Abt's central office. NASFAA were also present to lead portions of the training sessions and provide commentary or responses to questions in other sections of training.

At the end of each day, field managers and trainers discussed the day's activities; in this way, the field managers shaped the training program for the interviewers. Also, the training brought unresolved issues into focus; the field managers and the trainers developed procedures based on their discussions.

Field managers were taught about the intricacies of developing contacts with the institutions, notably working with an institution's chief administrator and study coordinator, and scheduling a convenient time for the institution visit. Issues concerning data collection in an institutional setting, such as professionalism and confidentiality, were stressed. Each section of the CADE system was covered: student addresses, characteristics and enrollment data, as well as needs analysis and student budgeting. Each of the standard financial aid application forms was reviewed.

Extensive opportunities to practice the application of these lessons were provided, using CADE and mock student data; this provided the field managers with an understanding of how to abstract the student data, as well as how to master the CADE system. During class, the training was usually conducted as a seminar: the trainers and the field managers worked together to solve the problems. At day's end, homework was assigned, so field managers could reinforce the lessons presented during class.

Also, the field managers were instructed in administrative procedures related to the study. They were taught how to communicate using electronic mail to keep central office apprised of their progress and their problems, as well as keep in close contact with the field interviewers. They were taught how to evaluate field interviewers. Field managers were taught how to prepare time and expenditure reports and the procedures for planning travel, as well as how to monitor costs and production.

4.3.2 Field Data Collector Recruitment and Training

Field data collectors were recruited from the ranks of Abt and RTI interviewers. Although field staff recruitment occurred before institutions elected to participate as either self-administered or requiring field staff, location of the interviewer was nonetheless a criteria for recruitment to NPSAS. Because the institutional records collecttion required travel to the campuses of participating institutions, a geographic spread of field data collector staff was desired to minimize expenses associated with travel and overnight stays. In addition to location, staff were recruited based on experience with education institutions or with record abstract tasks in other types of establishments (e.g., hospitals). Field data collector training followed the same format and content as described above for field managers.

4.3.3 Field Procedures -- Institutions Requesting Field Data Collectors

Field visits were required whenever an institutional coordinator requested this assistance. Typically, the choice between the self-administered and field data collector method occurred early in the process, however, in several instances, an institution switched from the self-administered to the field staff method after they received the CADE diskette. In either situation, the field visits followed essentially the same format. Field data collectors received the assignment of sampled student records on a laptop computer that included both the CADE record abstraction software and case-management software (described below), during the initial visit with the institutional coordinator, the institutional portion of the CADE was completed and field data collectors were briefed about the sources and location of student level information. Following the record abstraction task itself, files were transmitted back to the central office electronically.

Remote Management System

In addition to the CADE software used in the record abstract process, the laptops used by the field data collectors also contained Remote Management System (RMS) software for managing their workload of multiple institutions and electronic transfer of files and electronic mail for communication with the central office staff, field managers, and other field data collectors. The RMS consisted of three functional modules.

- The Manage function kept track of the student files of each institution in the field data collector's assignment, names of files for each institution, and the dates of transmission. The Manage function was used to load institution files into CADE and prepare files for transmission to the central office.

- A Toolbox function was used to copy files onto back-up diskettes initiate transmissions to the central office and perform basic utilities such as formatting diskettes or installing updated versions of CADE.

- A Newsletter was also available through the RMS to provide field data collectors with updated information on technical or administrative topics.

The RMS was used to transfer files of sampled students to the field data collectors in order to initiate data collection activities for a particular institution. The software automatically updated the institution receipt control system in the central office, noting the date that each file of sampled students was mailed to the field and the date of receiving files of completed records. The RMS also allowed each field data collector to load a student sample file into CADE in order to begin work at an institution.

Initial Meeting with NPSAS Institution Coordinator

Each field data collector had the responsibility of scheduling data collection with the institution coordinator designated by the chief administrator of the institution. The initial meeting with the coordinator typically occurred the morning of the first day of data collection at the institution. The purpose of this meeting was primarily logistical so that the field data

collector became familiar with the location administrative records and daily routines of key staff at the institution. The Institution Information section of CADE was completed during this interview with the coordinator. In addition, a check list was reviewed so that the field data collector could learn the sources of information required by the survey, the hours that the information would be available, the name and telephone numbers of a contact person at each office, and the medium used to store data (computer files, hard copy, microfiche, etc.). The purpose of this checklist was to assure that the field data collector had the information necessary to complete the record abstract task with a minimum of disruption to the institutional coordinator and staff.

Record Abstraction

Following the initial visits, the task of the field data collectors was tracking down the appropriate student records and abstracting necessary information into the CADE software. In institutions that maintained integrated records, this task was straight-forward and could be completed in a relatively brief period on campus. In other situations, records might be located in different offices at various locations on campus and record abstraction could take as long as a week.

4.3.4 Institutions That Used CADE

Institutions that elected to provide the information themselves were mailed the CADE diskette (including the sample of selected students) together with brief instructions on how to install the CADE software and its use. As discussed above, the CADE software was designed to be self-instructive and require very little paper instruction. Written materials included an "800" telephone number for a "help-line" where users could receive technical support. Upon completion of the record abstraction task, the institution mailed the completed CADE diskette back to either Abt or RTI, requiring a signature upon delivery.

4.4 Receipt and Processing

Receipt of the completed CADE data files -- whether completed by field data collectors or institution staff -- was monitored by the CADE Operations (CADE-OPS) module of the ICS. CADE-OPS was designed to perform four functions.

- Provide a receipt control system for naming and storing completed CADE files received from institutions. This was especially useful in monitoring the receipt of data files transmitted electronically by field data collectors. CADE-OPS was developed to complement the Manage function of the RMS by automatically receiving files transmitted electronically from the field, naming the files according to an established convention, storing the files in institution-level directories, and updating the institution receipt control record to reflect the receipt of the CADE data.

- Automatically run edit programs on each of the files received. These programs checked completed data fields in each student record and compiled statistics indicating the level of completeness at the student level and at the institution level and prepared reports based on these indicators. Receipt control and editing programs ran overnight on all new files received the previous day. Project staff reviewed edit reports to determine whether retrieval efforts were necessary prior to preloading the CADE data into the telephone computer assisted telephone interviewing (CATI) system (See "SYSTEM EDIT RESULTS" in Appendix C).

- Preload edited institution data into CATI records in order to initiate telephone interviewing with the students and parents.

- Generate routine production reports used by the project management to monitor overall progress in the institution survey and the backlog of cases available for CATI interviewing.

The telephone survey of students and parents is described in the following chapter.

4.5 Institution Records Collection Response Rates

Table 4.1 presents response rates for student institutional records abstraction, treating an institution as responding if any CADE data were obtained for any sample student. In some cases, only minimal information needed for tracing sample students was obtained. Table 4.1 shows that some student data were successfully abstracted for 1,079 of the 1,098 eligible institutions that provided lists for sample selection. Hence, 98.3 percent of these institutions also participated in CADE. The response rates for CADE range from 91.7 percent for private, for-profit, less-than-2-year institutions to 100 percent for several institutional sectors, including most of the public institutions. Weighted response rates are also presented in Table 4.1 based on the institution sampling weights adjusted for nonresponse to the request for student lists for sample selection. The weighted responses rates can be interpreted as the estimated percentages of eligible institutions that would participate in CADE, given that they would provide student lists for sample selection. The weighted response rates are generally comparable to the unweighted response rates, and the overall weighted response rate is 96.9 percent.

Response rates for institutional records abstraction are presented at the student level in Table 4.2, conditional on institutional participation in this phase of the study. Some data were abstracted for nearly all students (about 99 percent) when the institution participated in records abstraction. The student-level response rates were lowest (about 96 percent) among the institutions that sent copies of the student records to the central office (Abt or RTI) for data entry.

Table 4.1 Institution Response Rates for Data Abstraction, Given Institutional Response for Student Sampling

Type of Institution	Eligible with Sample Students	Participating Institutions	Unweighted Response Rate	Weighted Response Rate
All Institutions	1098	1079	98.3	96.9
Institutional Level:				
Less-than-2-year	153	144	94.1	94.7
2-year	249	248	99.6	98.6
Bachelors	121	116	95.9	95.3
Masters	271	270	99.6	99.8
Doctors	80	78	97.5	98.4
First-professional	224	223	99.6	98.2
Institutional Control:				
Public	576	573	99.5	99.5
Private, not-for-profit	381	374	98.2	97.6
Private, for-profit	141	132	93.6	93.7
Institutional Sector:				
Public, less-than-2-year	43	42	97.7	99.4
Public, 2-year	195	195	100.0	100.0
Public, Bachelors	42	40	95.2	93.4
Public, Masters	141	141	100.0	100.0
Public, Doctors	51	51	100.0	100.0
Public, First-professional	104	104	100.0	100.0
Private, not-for-profit, 2-year or less	36	36	100.0	100.0
Private, not-for-profit, Bachelors	71	68	95.8	94.5
Private, not-for-profit, Masters	126	125	99.2	99.8
Private, not-for-profit, Doctors or First-professional	148	145	98.0	97.3
Private, for-profit, less-than-2-year	96	88	91.7	93.3
Private, for profit, 2-year or more	45	44	97.8	95.7

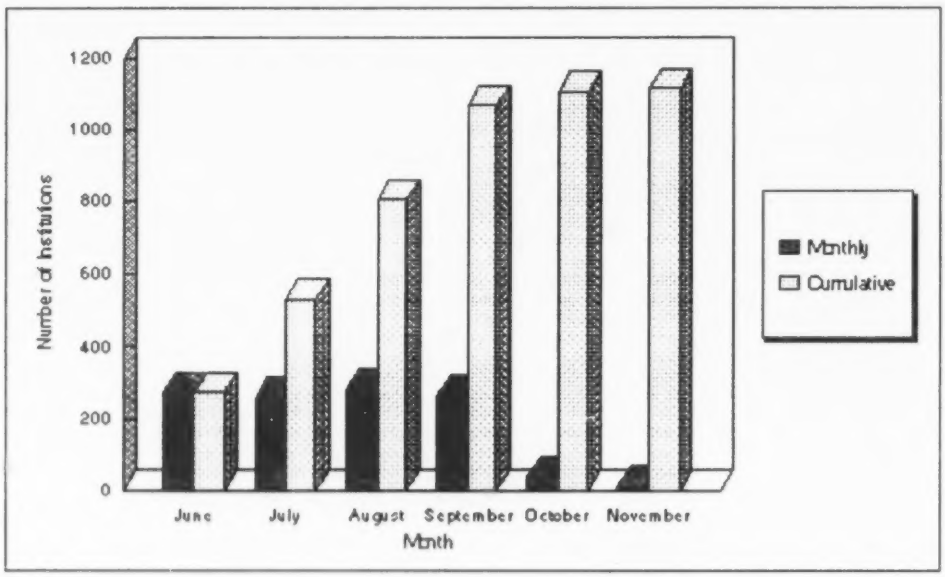
Table 4.2 Student-Level Response Rates for Data Abstraction, Given Institutional Response for Data Abstraction

Type of Student	Eligible Sample Students	Students Abstracted	Unweighted Response Rate	Weighted Response Rate
All Students	78,289	77,624	99.2	99.5
Institutional Level:				
Less-than-2-year	9,264	8,984	97.0	98.9
2-year	11,046	11,017	99.7	99.7
Bachelors	5,580	5,499	98.5	98.4
Masters	19,250	19,193	99.7	99.7
Doctors	8,432	8,281	98.2	98.1
First-professional	24,717	24,650	99.7	99.8
Institutional Control:				
Public	48,432	48,239	99.6	99.7
Private, for-profit	21,512	21,162	98.4	98.7
Private, not-for-profit	8,345	8,223	98.5	99.2
Institutional Sector:				
Public, less-than-2-year	1,818	1,791	98.5	99.9
Public, 2-year	8,873	8,848	99.7	99.7
Public, Bachelors	1,622	1,610	99.3	99.0
Public, Masters	12,879	12,854	99.8	99.9
Public, Doctors	6,796	6,731	99.0	99.0
Public, First-professional	16,444	16,405	99.8	99.8
Private, not-for-profit, 2-year or less	1,870	1,735	92.8	98.2
Private, not-for-profit, Bachelors	3,684	3,615	98.1	97.8
Private, not-for-profit, Masters	6,095	6,063	99.5	99.4
Private, not-for-profit, Doctors or First-professional	9,863	9,749	98.8	98.7
Private, for-profit, less-than-2-year	6,391	6,273	98.2	98.8
Private, for-profit, 2-year or more	1,954	1,950	99.8	99.7
Student Level:				
Less-than-2-year enrollee	9,193	8,917	97.0	98.9
2-year enrollee	10,870	10,841	99.7	99.7
Baccalaureate recipient	16,250	16,148	99.4	99.4
Other undergraduate	27,331	27,165	99.4	99.4
Graduate student	10,057	9,987	99.3	99.3
First-professional student	4,588	4,566	99.5	99.5
Abstraction Method:				
Self Abstraction	27,612	27,252	98.7	99.4
Field Interviewer	44,386	44,343	99.9	99.9
Copies sent to central office	6,291	6,029	95.8	95.8

4.6 Field Period for Record Abstract Data

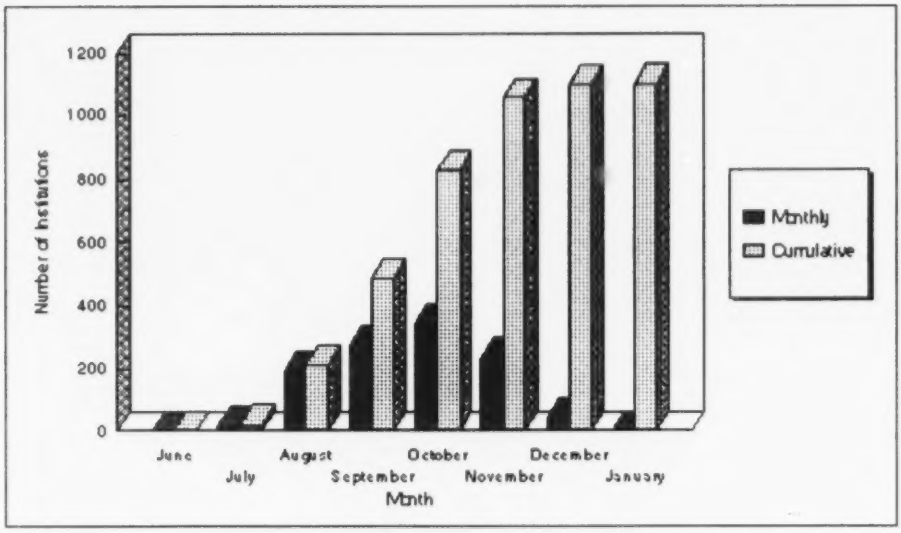
Figure 4.3 displays the monthly and cumulative monthly collection of institution enrollment files/lists and Figure 4.4 displays the monthly and cumulative monthly of institutional records data. Although the initial mailing to institutions occurred in February, the institutions were unable to comply with requests for enrollment data until June (month 6 in Figure 4.3). The number of institutions providing enrollment data was uniform throughout the summer (June, July, August, and September) and the last files of enrollment data were not obtained until November.

Figure 4.3 Field Period for Enrollment Data, June through November, 1993



In Figure 4.4, the record abstract data from the first institution was returned in June, although significant numbers of institutions did not accumulate until September (485 institutions). Poor participation over the summer months reflect to some extent the flow of institutions providing enrollment data for sampling. Summer vacations by staff in the student financial aid offices was a major factor. With the start of the academic year in fall, the pace of record abstraction increased (in September and October) and record abstract data had been collected for most of the participating institutions by the end of November. However, data collection continued through early January in order to maximize the number of participating students in the telephone survey.

Figure 4.4 Field Period for Record Abstract Data, June, 1993 through January, 1994



4.7 Choice of Method by Institution Characteristics

The postsecondary institutions agreeing to participate in NPSAS and providing student sampling lists were offered a number of options for how data were to be extracted from their institutional records for the students sampled at their institution. The preferred option was to have institutional staff use the computerized assisted data entry (CADE) system developed by study staff. The next preferred option was having contractor field staff abstract data from institutional records and enter them through CADE. For institutions failing to accept either of these methods, other less preferred self-abstraction alternatives were used (e.g., provision of computer printouts, photocopies, or hard copies of CADE screens on which information was manually entered).

Both self- and field-abstraction methods yielded data in a well defined and consistent format; as expected, the "other" methods did not. Also, considering all data collection and processing costs, the expense of the various abstraction methods increased monotonically with the previously indicated "preference" of the method. The systematic incompleteness of some data items, where abstraction was provided through "other" approaches, suggested this approach may have been used as a way to restrict the information provided without having to deal with the CADE system or with contractor staff on campus.

Of the 1,094 institutions allowing abstraction, 493 (45 percent) initially chose the preferred method of self-abstraction. An additional 517 (47 percent) initially chose field-abstraction, and 84 (8 percent) chose to provide record abstract data in some other way. A number of institutions changed their choice of abstraction method during the data collection period; the bulk of these changes represented shifting from an initial choice of self-abstraction to a choice of contractor staff abstraction. Because the institutional control file was not consistently updated during operations, only the initial institutional choices can be reported reliably.

Institutional initial choices are shown in Table 4.3 as a function of postsecondary education sector (i.e., institutional control and highest level of offering -- factors that defined strata in the sampling frame)[1]. Systematic differences in choice can be observed in these data. Specifically, choice of self-abstraction in the public sector generally decreased with higher levels of offering; however, no such trend was observed in the independent sector, and the trend was clearly reversed for private, for-profit institutions. Also, public institutions with highest offerings less than 4-years were most unlikely to use "other" methods, while doctorate-granting public institutions and less-than-two-year private, for-profit institutions were most likely to use "other" methods.

Within the public sector of postsecondary education (and to a lesser extent in the independent sector), institutions offering doctorate and first professional programs are, on average, much larger than the institutions that do not, and student sample sizes within institutions were partially related to size. Also, student sample sizes at all institutions offering both a baccalaureate degree and programs beyond a 4-year degree were somewhat inflated, since these institutions contributed both undergraduate students and graduate-level students. Consequently, a good portion of the inverse relationship between highest level of offering and choice of self abstraction could reasonably be attributed to increasing burden (i.e., greater numbers of abstractions required) with increasing level of offering.

An examination of choice of record abstract method as a function of abstracting burden is shown in Table 4.4[2]. The specific break points for "small," "medium," and "large" burden were determined on the basis of total number of students sampled, such that about a third of the total student sample came from "small" burden institutions, another third from "medium," and the final third from "large." The relationship between increasing burden and lowered likelihood of choosing the self-abstraction method is clearly obvious in the results and is consistent within all control sectors.

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[1] To maintain adequate cell sizes, it was necessary to collapse some sampling strata for this presentation.

[2] It was also necessary to collapse some cells in this presentation to maintain adequate cell sizes.

Other underlying factors leading to differences in choice of abstracting method are certainly at work, however. The low propensity of using "other" methods (principally supplying printouts or photocopies) in less than 4-year public institutions may reflect lack of ready access to central records files and/or processing equipment needed for the simplest of these approaches (i.e., provision of computer printouts). Also, the condition of being "over committed," which was often expressed by many institutional coordinators at private, for-profit institutions may explain the generally lower choice of self-abstracting CADE by such institutions (and associated higher than average rates of reliance on contractor field staff and "other" methods).

The relatively high propensity of doctorate-granting public institutions to choose other methods may be an anomaly of the small group size; however, this category of institutions, as defined for NPSAS sampling, represents a somewhat different population than might be first imagined (namely, institutions offering doctorate-level programs but not offering first-professional programs). Most of the state mega-universities offer both types of programs (and as such were placed in the "First Professional" stratum). While such large institutions universally have automated records systems, such systems are frequently not "central" (i.e., they keep computer records in separate files -- and frequently separate computer facilities -- for undergraduates, graduate students and first professionals). Under such conditions the provision of computer printouts for the entire sample at these institutions would have involved coordination through a number of record systems. The smaller state universities offering only doctoral programs are more likely to have central records, and thus provision of printouts from this single system would be a more viable alternative for them. This hypothesis is partially supported by the greater propensity of "medium" burden institutions (also typically mid-sized institutions) to use the "other" methods.

Table 4.3 Method of Record Abstraction Used to Collect Student Data by Institutional Sector

Institutional Sector: Control	Highest Level of Offering [b]	Total Count	Abstraction Method Used [a]					
			Field-Abstraction		Self-Abstraction		Other	
			Count	Percent	Count	Percent	Count	Percent
Total		1,094	517	47.3	493	45.1	84	7.7
Public	Total	575	272	47.3	263	45.7	40	7.0
	Less than two years	42	9	21.4	32	76.2	1	2.4
	Two to less than four years	195	73	37.4	117	60.0	5	2.6
	Bachelors-granting	42	20	47.6	18	42.9	4	9.5
	Masters-granting	141	68	48.2	62	44.0	11	7.8
	Doctorate-granting	51	29	56.9	12	23.5	10	19.6
	First-professional	104	73	70.2	22	21.2	9	8.7
Private, not-for-profit	Total	381	173	45.4	179	47.0	29	7.6
	Less than four years	36	17	47.2	17	47.2	2	5.6
	Bachelors-granting	71	29	40.9	36	50.7	6	8.5
	Masters-granting	126	52	41.3	62	49.2	12	9.5
	Doctorate-granting or first-professional	148	75	50.7	64	43.2	9	6.1
Private, for-profit	Total	138	72	52.2	51	37.0	15	10.9
	Less than two years	93	55	59.1	27	29.0	11	11.8
	Two years or more	45	17	37.8	24	53.3	4	8.9

NOTE: Statistics are based on the 1,094 postsecondary institutions agreeing to participate in the study. All percentages reported are based on row total counts.

[a] Institutions had the choice of allowing local field staff to perform the record abstractions, performing the abstractions themselves using a CADE program provided by the contractor, or providing the requisite information in some other format, such as computer printouts or photocopies of selected files. A number of institutions changed abstraction method during data collection (principally from self-abstraction to abstraction by contractor field staff, only initial methods are reported here.

[b] Level of Offering strata were combined within sector of control to maintain adequate cell sizes.

Table 4.4 Method of Record Abstraction Used to Collect Student Data by Institutional Burden and Control

Institution Type		Total Count	Abstraction Method Used [a]					
			Field-Abstraction		Self-Abstraction		Other	
Control	Burden [b]		Count	Percent	Count	Percent	Count	Percent
Total	Total	1,094	517	47.3	493	45.1	84	7.7
	Small	685	263	38.4	374	54.6	48	7.0
	Medium and Large	409	254	62.1	119	29.1	36	8.8
Public	Total	575	272	47.3	263	45.7	40	7.0
	Small	329	114	34.7	198	60.2	17	5.2
	Medium	145	79	54.5	49	33.8	17	11.7
	Large	101	79	78.2	16	15.8	6	5.9
Private, not-for-profit	Total	381	173	45.4	179	47.0	29	7.6
	Small	265	105	39.6	137	51.7	23	8.7
	Medium and large	116	68	58.6	42	36.2	6	5.2
Private, for-profit	Total	138	72	52.2	51	40.0	15	10.9
	Small	91	44	48.4	39	42.9	8	8.8
	Medium and large	47	28	59.6	12	25.5	7	14.9

Note: Statistics are based on the 1,094 postsecondary institutions agreeing to participate in the study; all percentages are based on row total counts. Institutional burden (related to institutional size) is defined relative to the number of selected students for whom records were to be abstracted (range of 2 to 371): "small" as 50 or fewer, "medium as 51 - 127, "large" as 128 or more.

[a] Institutions had the choice of allowing local field staff to perform the record abstractions, performing the abstractions themselves using a CADE program provided by the contractor, or providing the requisite information in some other format, such as computer printouts or photocopies of selected files. A number of institutions changed abstraction method during data collection (principally from self-abstraction to abstraction by contractor field staff); only initial methods are reported here.

[b] Burden levels were combined within some institutional control levels to maintain adequate cell sizes.

4.8 Completeness and Validity Analysis

All data abstracted from student institutional records were subjected to edit checks for completeness before being preloaded into CATI for subsequent use during interviewing. Completeness of CADE data can be evaluated by determining the extent to which a key set of elements, listed in Table 4.5, was available from institutional records for each student.

Table 4.5 -- Key Student Data Elements Abstracted from Institutional Records

Data Element			
	Gender		Total credits across enrolled terms
✓	Age		Type of credit hours
	Race/ethnicity		Cumulative GPA at institution
	Hispanic origin	✓	Applied for financial aid during study year
	Citizenship		Awarded financial aid for study year
	High school diploma or equivalent	✓	Dependency status during primary term
	Local residence	✓	Pell grant index in primary year
	Major	✓	Expected family contribution in primary year
	Enrolled during prior year	✓	Expected family contribution in primary year
	Type of program for enrollment	✓	Form used to obtain needs analysis data
	Student level -- first term	✓	Student's adjusted gross income
	Student level -- last term	✓	Parent's adjusted gross income
	Attendance status	✓	Federal Pell Grant Program

✓ denotes that the item was most likely available in the institutional records of aided students only.

Overall, aided students were expected to have more of the data elements than nonaided students simply because nonaided student records do not contain the financial aid information, such as the Pell grant index, required of aided students.

Tables 4.6 and 4.7 provide the student-based, average numbers of elements obtained from the institutional records of aided and nonaided students by institutional sector and method of record abstraction. Across institutional sectors, there were only small differences in the mean number of items abstracted with one exception, records abstracted by field staff from public institutions offering less than two-year programs. On average, less than half the critical items expected for aided (49 percent) and nonaided (41 percent) students were abstracted by field staff in less-than-two-year public institutions, a result which may be related to the complaint frequently heard from field staff that many of the less than four-year public institutions had difficulty locating or "did not have" some of the records needed for abstraction.

Particular CATI items were designed to confirm information obtained during record abstraction as one measure of the validity of the abstraction methods used. Table 4.8 presents student-level agreement between institutional reports of receipt of aid and students' subsequent confirmation during telephone interviewing of receipt of aid, by institutional sector and method of abstraction. Among students receiving aid, percent agreement was at least 94

percent for all sectors and methods of abstraction. In contrast, percent agreement among nonaided students was markedly lower than the aided students both across institutional sectors and methods of abstraction, perhaps because reports of nonreceipt of aid ($0.00) were confounded during record abstraction with missing data. For example, an institution may not have been aware of a student's receipt of employer aid, especially if the student did not receive federal aid.

Table 4.6 — Average Count of Critical CADE Items Abstracted from Aided Student Records by Method of Abstraction and Institutional Sector

Control	Highest Level of Offering[b]	Abstraction Method Used[a]														
		Field-Abstraction					Self-Abstraction					Other Method				
		Count	Mini-mum	Maxi-mum	Average	Percent	Count	Mini-mum	Maxi-mum	Average	Percent	Count	Mini-mum	Maxi-mum	Average	Percent
	Total	14,512	2	24	17.9	68.9	8,449	2	24	17.6	67.7	1,733	2	23	15.2	58.5
Public	Total	8,687	2	24	18.1	69.6	4,083	2	24	17.7	68.1	997	2	23	15.4	59.2
	Less than two years	74	3	21	12.7	48.9	331	2	23	16.4	63.1	—	—	—	—	—
	Two years	686	7	24	17.5	67.3	842	2	24	16.8	64.6	29	6	20	11.2	43.1
	Bachelors-granting and beyond	7,927	2	24	18.2	70.0	2,910	2	24	18.1	69.6	968	2	23	15.5	59.6
Private, not-for-profit	Total	4,114	3	24	18.1	69.6	3,299	2	24	17.9	68.9	356	2	23	16.1	61.9
	Less than four years	199	6	23	16.6	63.9	240	2	23	17.3	66.5	52	11	22	16.3	62.7
	Bachelors-granting and beyond	3,915	3	24	18.2	70.0	3,059	2	24	18.0	69.2	304	2	23	16.1	61.9
Private, for-profit	Total	1,711	2	23	16.8	64.6	1,067	2	23	16.3	62.7	380	2	22	14.1	54.2
	Less than two years	1,458	2	23	16.7	64.2	657	2	23	15.9	61.2	316	2	22	14.1	54.2
	Two years and beyond	253	3	22	17.2	66.2	410	3	23	16.9	65.0	64	2	20	13.8	53.1

NOTE: Statistics are based on the 24,694 eligible sample members who responded during CATI and either were listed during institutional record abstraction as having received aid or who reported receipt of aid (CX80) during CATI. (Averages for sample members who did not receive aid are reported in Table 3.) Up to 26 CADE elements were expected for aided students.

[a]Institutions had the choice of allowing local field staff to perform the record abstractions, performing the abstractions themselves using a CADE program provided by the contractor, or providing the requisite information in some other format, such as computer printouts or photocopies of selected files. A number of institutions changed abstraction method during data collection (principally from self-abstraction to abstraction by contractor field staff), only initial methods are reported here.

[b]Level of offering strata were combined within sector of control to maintain adequate cell sizes.

Table 4.7 — Average Count of Critical CADE Items Abstracted from Nonaided Student Records by Method of Abstraction and Institutional Sector

Control	Highest Level of Offering[b]	Abstraction Method Used[a]														
		Field-Abstraction					Self-Abstraction					Other Method				
		Count	Minimum	Maximum	Average	Percent	Count	Minimum	Maximum	Average	Percent	Count	Minimum	Maximum	Average	Percent
	Total	11,281	2	22	13.5	84.4	6,711	2	23	12.6	78.8	1,350	2	21	9.6	60.0
Public	Total	8,955	2	22	13.7	85.6	4,701	2	23	12.9	80.6	968	2	21	9.9	61.9
	Less than two years	193	4	13	6.6	41.3	235	2	17	10.2	63.8	23	8	9	8.0	50.0
	Two years	1,163	2	21	13.5	84.4	1,918	2	20	12.7	79.4	42	5	14	8.4	52.5
	Bachelors-granting and beyond	7,599	2	22	14.0	87.5	2,548	2	23	13.3	83.1	903	2	21	10.0	62.5
Private, not-for-profit	Total	1,989	2	21	13.1	81.9	1,684	2	22	12.0	75.0	302	2	18	9.5	59.4
	Less than four years	176	3	21	10.4	65.0	101	2	19	10.3	64.4	20	9	16	12.5	78.1
	Bachelors-granting and beyond	1,813	2	21	13.4	83.8	1,583	2	22	12.1	75.6	282	2	18	9.3	58.1
Private, for-profit	Total	337	2	18	10.1	63.1	326	2	19	11.8	73.8	80	2	18	6.3	39.4
	Less than two years	259	2	18	10.8	67.5	218	2	19	11.4	71.3	60	2	13	6.1	38.1
	Two years and beyond	78	2	17	8.0	50.0	108	2	17	12.6	78.8	20	2	18	6.9	43.1

NOTE: Statistics are based on the 19,342 eligible sample members who responded during CATI and either were listed during institutional record abstraction as not having received aid or who reported nonreceipt of aid (CX80) during CATI. (Averages for sample members who received aid are reported in Table 2.) Up to 16 elements were expected for nonaided students, although up to 26 elements were possible.

[a]Institutions had the choice of allowing local field staff to perform the record abstractions, performing the abstractions themselves using a CADE program provided by the contractor, or providing the requisite information in some other format, such as computer printouts or photocopies of selected files. A number of institutions changed abstraction method during data collection (principally from self-abstraction to abstraction by contractor field staff); only initial methods are reported here.

[b]Level of offering data were combined within sector of control to maintain adequate cell sizes.

Table 4.8 — Student Agreement with Institution-Reported Receipt of Financial Aid by Method of CADE Abstraction and Institutional Sector

Institutional Sector		Abstraction Method Used[a]																	
		Field-Abstraction						Self-Abstraction						Other Method					
				Received Aid		Did Not Receive Aid				Received Aid		Did Not Receive Aid				Received Aid		Did Not Receive Aid	
Control	Highest Level of Offering[b]	Total[c] Count	Total[d] Percent	Count[c]	Percent[d]	Count	Percent	Total Count	Total Percent	Count	Percent	Count	Percent	Total Count	Total Percent	Count	Percent	Count	Percent
	Total	24,217	92.2	12,496	95.6	11,721	88.6	14,211	92.6	7,237	96.7	6,974	88.4	2,904	92.7	1,492	96.5	1,412	88.7
Public	Total	16,479	91.6	7,247	95.1	9,232	89.0	8,221	91.8	3,366	96.1	4,855	88.8	1,835	92.3	832	95.9	1,003	89.3
	Less than two years	254	87.0	43	95.4	211	85.3	555	92.3	287	98.3	268	85.8	22	100.0	—	—	22	100.0
	Two years	1,706	89.9	500	96.4	1,206	87.2	2,529	90.7	608	94.4	1,921	89.5	63	90.5	20	100.0	43	86.1
	Bachelors-granting and beyond	14,519	91.9	6,704	94.9	7,815	89.3	5,137	92.2	2,471	96.2	2,666	88.6	1,750	92.3	812	95.8	938	89.2
Private, not-for-profit	Total	5,767	92.7	3,629	96.0	2,138	87.0	4,647	93.8	2,895	97.2	1,752	88.1	624	92.8	307	97.4	317	88.3
	Less than four years	357	90.5	163	96.3	194	85.6	327	95.1	224	96.9	103	91.3	67	92.5	46	97.8	21	81.0
	Bachelors-granting and beyond	5,410	92.8	3,466	96.0	1,944	87.2	4,320	93.7	2,671	97.3	1,649	87.9	557	92.8	261	97.3	296	89.0
Private, for-profit	Total	1,971	95.6	1,620	96.9	351	89.5	1,343	93.8	976	97.0	367	85.3	445	94.2	353	96.9	92	83.7
	Less than two years	1,652	95.3	1,378	96.9	274	87.2	847	92.8	596	96.5	251	84.1	361	94.7	295	97.0	66	84.9
	Two years and beyond	319	97.2	242	97.1	77	97.4	496	95.6	380	97.9	116	87.9	84	91.7	58	96.6	26	80.8

NOTE: Statistics are based on the 41,332 eligible sample members who attended only one postsecondary institution, responded during CATI, and answered the relevant CATI item (CX80 or C081 depending upon aid status). Determinations of aid receipt were based solely on institutional reports of amounts of aid received. Reports of no aid are confounded since $0 could mean either aid was not received or that aid information was missing. Agreement was attained if students confirmed institutional reports of receipt (CX80) or nonreceipt (C081) of aid.

[a]Institutions had the choice of allowing local field staff to perform the record abstractions, performing the abstractions themselves using a CADE program provided by the contractor, or p iding the requisite information in some other format, such as computer printouts or photocopies of selected files. A number of institutions changed abstraction method during data collection (principally from self-abstraction to abstraction by cont tor field staff); only initial methods are reported here.

[b]Level of offering strata were combined within sector of control to maintain adequate cell sizes.

[c]Total Count and Count represent the total number of sample members in the category.

[d]Total Percent and Percent represent the percentage of sample members in the category agreeing with the institutional report of aid status.

CHAPTER 5 STUDENT AND PARENT SURVEY

The data abstracted from institution records were complemented with additional information collected during a telephone interview with sampled students and, for a subsample of students, with parents. The student and parent questions were programmed into a computer assisted telephone interviewing (CATI) system. Identical systems, training programs, and procedures were used at the two facilities at Abt and RTI. Data collected from institutions were preloaded into the CATI systems in order to assist students during the telephone interview. Although the initial schedule called for telephone interviewing to begin in June of 1993, because of the delays in acquiring the frames for student sampling (discussed in Chapter 4), the student and parent survey did not begin until September of 1993. Interviewing continued through March 20, 1994.

5.1 Objectives

The additional data collected from students and parents are required in the NSPAS for several reasons. First, the information abstracted from the sampled institutions may represent only a portion of the financial aid received by students during the NPSAS study year either because the institution may not be aware of all sources of financial aid or because students may attend more than the sampled institution during the NSPAS year. Second, one purpose of NPSAS is to learn more about how students and their families finance postsecondary education and financial aid is only one mechanism. Student and their families are the only knowledgeable source of information on how individual families plan for educational expenses. Third, another research issue of the NPSAS is how financial aid and other financing mechanisms can affect student plans for the future, including additional education, entry into the labor market, and family formation.

Both the student and the parent interviews were conducted using dedicated CATI-LAN-based software. The system provided the following key features for the data collection activities:

- On-line access to locating information and history of locating efforts for each case
- Automated scheduling module to deliver cases to telephone interviewers
- On-line record of calls, including history of attempts to contact
- State-of-the-art CATI module administration, with front-end editing of responses
- Post-interview coding of open-ended responses
- Management module for case status and progress tracking

These capabilities reduced the number of discrete stages required in data collection and preparation activities, and increased capabilities for immediate error reconciliation.

When possible, previously obtained financial aid and administrative record data were pre-loaded into the CATI system to minimize the length of the telephone interview with each respondent. The student and parent CATIs were designed so that either could be administered first, and, if information had been provided by the first respondent (either student or parent), questions were not repeated with the second respondent from the same family.

5.2 Design of the CATI Instruments

The Student CATI for NPSAS:93 collected student self-report data concerning enrollment, educational costs, employment, financial aid and additional sources of support, specific demographic and financial characteristics of students and parents, and locating data for the first follow-up of B&B students.

In addition to collecting information for those sampled students who received post-secondary financial aid, the survey was critical for collecting information on the financial characteristics of unaided, independent students as well as for those students whose financial aid records were unavailable from the institution. In this instance the students themselves were the primary source of information about their funding sources for their education and education-related expenses.

The NPSAS:93 Parent Survey was designed to obtain information from the parents of primarily unaided, dependent students. The sampled parents were surveyed regarding the support given to their students, their employment and financial status, and the support required from other dependents.

The CATI system within the ICS consisted of three modules designed to assist in locating students and parents, conducting interviews with these respondents, and providing daily production reports for the project staff.

The locating module was preloaded with address information collected from the institutions. In addition, this module contained a detailed roster that locators used to record the history and results of locating attempts, including new addresses and telephone numbers.

The CATI student and parent interviews were designed to capture a variety of information about the student's educational experiences during the NPSAS year. The student interview consisted of the ten modules listed in Figure 5.1 and the parent CATI consisted of the six modules listed in Figure 5.2. A list of CATI data elements is provided in Appendix A. The student and parent CATIs were designed so that either could be administered first and, if similiar data elements had been provided by the first respondent, questions need not be repeated in the second interview. Students in the B&B cohort were administered a slightly longer CATI that included items on future plans related to education, occupation, and family formation.

Figure 5.1 Modules of the Student CATI, NPSAS:93

- Enrollment
- Costs of education
- Financial aid
- Additional sources of support
- Employment
- Education expectations
- Student characteristics
- Parent characteristics
- Financial status
- Locating data (for the first follow-up of B&B students)

The NPSAS:93 Student CATI contained 10 sections:

1) Institution Enrollment - Current enrollment information dealing with curriculum, level in institution, GPA (grade point average) graduation plans, as well as high school education and other degrees, licenses, and certificates earned.

2) Enrollment and Costs - Each enrollment period between July 1, 1992 through June 30, 1993 was covered. Attendance, number of courses taken and credits earned, tuition, fees and other expenses were covered. The section included a focus on housing location and expenses: housing costs, utilities, meals, transportation, personal expenses and repayment of educational loans.

3) Financial Aid - Grants, scholarships, student loans, work-study, employer or military assistance, or any other sources, were included in these inquires, but financial assistance from family or relatives was not included. The amount of aid, type (i.e., grant, scholarship, source (state, federal) and amount of repayment required was recorded.

4) Additional Sources of Support - Other sources of support, the amount and types of expenses the support was used for were recorded.

5) Employment - Employment between July 1, 1992 and June 30, 1993. Occupation, business and/or industry codes, were automatically displayed for immediate data entry.

6) Educational Expectations - Assessment of the student's educational expectations and satisfaction with the institution, and future educational and employment expectations.

7) Student Demographics - Student's gender, race, ethnicity, functional limitations, and history of voting and community service.

8) Parent Demographics - Student's parent's and/or guardian's age, education, race, ethnicity and income

9) Financial Status - Student's (and student spouse's) current assets, debts, 1991 Federal income tax, 1991 and 1992 income and expenses, and previous five years of employment.

10) Locating Information - Verification of student social security number. Locating and contacting information for B&B students' parents.

The NPSAS:93 Parent Interview contained six major sections:

1) Parental support to the student - Parental contributions and loans to the sampled student, sources and amounts of those funds

2) Dependents - Number of dependents, level in institution, amount paid for tuition

3) Employment and financial status - Parent profession/occupations, income, assets, taxes

4) Demographic characteristics - Age, race, education, sources of parental educational support

5) Student's education - Familiarity with financial aid programs and whether or not the student applied

6) Attitudes - Details about plans for graduate school and/or employment asked of parents of B&B cohort only.

Figure 5.2 Modules of the Parent CATI, NPSAS:93

- Parental support
- Dependents
- Employment and financial condition
- Parent demographics
- Sample student education
- Attitudes

As indicated previously, information was preloaded from the CADE system to the CATI systems. Preloaded information included terms of enrollment in the sampled institution (beginning and ending dates of each term of enrollment), information from the needs analysis and budget sections of CADE, including educational expenses, and detailed information on sources and amounts of financial aid. During the interview, information on amounts of awards, was summarized and presented as a total to students for verification. If students disagreed with the total amount, the interview was routed through a detailed set of questions to learn about sources of financial aid that the institutional records may not have captured; however, if the student verified the summary, this long battery of questions was skipped. For this reason, the preload feature of the NPSAS:93 data capture systems considerably reduced respondent burden.

The CATI system was programmed using the Computer Assisted Survey Execution System (CASES) developed at the University of California, Berkeley. CASES is a very powerful and very flexible framework for CATI applications. Standard features include automatic scheduling of interviews to assure that attempts are made at various times throughout interviewing shifts. Call records for each sample member are time and date stamped and are used to automatically update event and disposition codes that are used in the preparation of production reports. Time stamps may be inserted throughout the CATI to calculate minutes per section. The CATI system itself includes range checks and inter-item consistency checks and routing to different sections of the questionnarie depending on responses to filter questions. The NPSAS application made frequent use of the preload feature of CASES.

In addition to these standard features, customized applications were developed at Abt and RTI to handle specific needs of the study. A frequent specification for items in the NPSAS was the ability to enter data in a "grid" format, for example, listing beginning and ending for terms of enrollment. Many of the questions concerning income, assets, and

sources of financial aid employed a grid format. Another type of customized application was NCES-supplied standard automated coding schemes use in coding student's major field of study and student's occupation and industry.

The reporting module provided the project staff with daily production reports on the results of locating and interviewing. Separate reports were developed for all students and all parents and for the students and parents in the B&B cohort. Separate reports were generated for the telephone shops at Abt and RTI as well as a summary report documenting production at both locations. In addition to these reports, which documented overall production in terms of completed interviews, additional management reports focussed on special topics, for example, locating efforts or refusal conversion efforts or interviewer level production. These reports were used by the telephone shop management at both Abt and RTI to identify and respond to problems that might affect production.

5.3 Survey Operations

5.3.1 Staffing and Interviewer Training

The number of interviewers required for a project the size of NPSAS exceeded the interviewing staff on hand at both locations and an extensive recruiting effort was necessary to hire additional staff. Interviewers were recruited a number of sources including newspaper advertisements, local educational institutions, and temporary agencies. Job candidates were screened for diction, maturity, and telephone presence. All new hires received a day-long general training course in basic telephone interviewing techniques and use of the CATI system.

In addition, all interviewers assigned to NPSAS receieved a 4-day study-specific training. During this training, interviewers learned about the purposes of the NPSAS study, the structure and flow of the student and parent CATIs, item-by-item instructions, specific refusal conversion techniques, locating procedures, and administrative procedures. Training relied heavily on practice exercises so that the interviewers developed skill and familiarity with the survey instruments and basic concepts of the study. The first interviews of all new interviews were carefully monitored and both positive and negative comments were provided immediately to the interviewer.

5.2.2 NPSAS Telephone Interview Procedures

Call Scheduling

Student and parent interviews were scheduled using the CASES system scheduler, which automated the assignment and delivery of cases to telephone interviewers. The CATI automated scheduler enabled tracking of all call-backs to potential respondents through the grouping of active cases into various *queues*. At the time of interviewer log-in, the scheduler automatically distributed the most appropriate calls for that work shift. The interviewer would then review the record of calls for each allocated case, to prepare for the next immediate telephone call. During the work shift, the queues were automatically searched and

the most immediate, appropriate cases were allocated for calls. Interviewers entered information obtained during the new telephone call so that the interview was conducted, or the case could be sent to the proper queue for the next appointment to be met. CATI automatically assigned next available cases in this order of priority:

1) Hard appointments to call back

2) Soft appointments to call back

3) Missed appointments

4) Records that were otherwise unresolved

5) New cases

New cases appeared in the system with blank spaces in the record of calls. The first screen of a new case denoted the student's name, institution attended, and the parent's name. As calling attempts were made, the results were recorded, along with date and time of the most recent call.

This scheduling method provided a highly efficient system of case assignment by reducing supervisory and clerical time, automatically monitoring appointments and call-backs, and reducing error and variation in the implementation of survey priorities and objectives.

Contact Procedures

Advance letters were sent to sampled students and parents to inform them of their selection and to review the purpose of the study. Once the interviewer indicated that the respondent had been reached, the CATI introduction screen appeared. The introduction on the screen delivered to the respondent was designed to be informative and to quickly involve the respondent in the interview. It provided a clear and efficient way of introducing both the study and the interviewer. If it was determined that the respondent had received the letter, the respondent was informed that participation in the survey was voluntary and all information would be kept confidential, and the interview was conducted. If it was determined that the respondent had not received the letter, the interviewer would explain the legal authority and purpose of the study, as well as the voluntary nature of participation and confidentiality of the data. If the respondent would not conduct the interview without having read the letter, the letter was re-mailed, and an appointment was made for a call-back in one week.

If a student or parent was unable to complete an interview at the time of the first contact, the interviewer attempted to schedule an appointment at a later time. If the student was not available to schedule an appointment, the interviewer asked the person who answered the telephone for advice about when to call back to reach the respondent.

In cases where respondents could not be reached through repeated attempts by telephone, interviewers were instructed to leave an "800" number for respondents to call back. The number could be left on an answering machine, with another member of the respondent's

household, or, in some cases, the number was included in a letter sent to the respondent's address. In each case where a number was provided for a respondent to call in, a Respondent Call-In form was completed. These forms were filed alphabetically, in a central location, near the call-in phone, in order that the interviewer assigned to the incoming call could find the case quickly. If the interview was conducted as a respondent call-in, the telephone interviewer was responsible for completing the Respondent Call-In form and recording the results.

It was necessary to locate and interview over 80 percent of students and parents in the NPSAS:93 sample. Various procedures were developed for tracing and locating NPSAS respondents. If calls made to a sample member's known telephone number(s) did not result in a contact, the interviewer initiated tracing efforts using the tracing/locating module. (Locating information was preloaded into the module based upon the information obtained from institution records.) If locator contacts did not provide a new telephone number for a sample member, interviewers attempted to elicit further leads from the contact. Any new locator information was immediately entered into the module.

Interim Codes

During the tracing and interviewing activities, interim result codes were used to document the status of cases. The codes represent each attempt to contact respondents and complete interviews. The interim codes are presented here:

10 - RING, NO ANSWER	19 - PENDING REFUSAL
11 - BUSY SIGNAL	20 - PARTIAL INTERVIEW REFUSAL
12 - ANSWERING MACHINE	21 - PENDING LANGUAGE BARRIER
13 - COMPUTER MODEM	22 - CALLBACK
14 - STUDENT TO CALL IN	23 - PENDING OTHER

Tracing interim codes were used until at least two questions in the interview were completed. Pending language barriers were also noted with a provision to record whether the foreign language would be Spanish or another language. If the interviewer was dubious about the second language, Spanish was noted.

The CATI system also provided for notation of whether the respondent was out of the country. Prompts in the system would help determine the date of the respondent's return.

Final Codes

After the first two questions of the interview had been answered final result codes were used. Result codes were preceded by a "2" when assigned for students and 300 level for the parent. The Final Codes are as follows:

67 - WRONG/INVALID NUMBER	92 - NO TELEPHONE
70 - FINAL REFUSAL	93 - UNABLE TO CONTACT
71 - FINAL LANGUAGE BARRIER	94 - ELIGIBLE BUT UNAVAILABLE
72 - FINAL BREAKOFF	96 - INELIGIBLE
74 - FINAL OTHER	97 - OUT OF COUNTRY
75 - OBTAINED NEW TRACING	98 - DECEASED
76 - CONTACT-NO TRACING	99 - INTERVIEW COMPLETE
77 - PREV TRACING CONFIRMED	

Locating

During institutional record abstraction, attempts were made to obtain up to four addresses and associated telephone numbers for each sampled student (e.g., student's local and permanent addresses and telephone numbers, parent's address and number, and an emergency contact address and number), in order to facilitate subsequent locating efforts during CATI operations.[1] Obtained addresses and/or telephone numbers were preloaded into the CATI record for tracing, together with an indicator that the information had been abstracted from the student's institutional record. Attempts to contact sample members by telephone started with these preloaded addresses or telephone numbers.

An index of the usefulness of abstracted contact information was defined as the rate of successful contacts at preloaded addresses/telephone numbers. Table 5.1 provides the number and percentage of sample members contacted at a preloaded address, as well as the number and percentage of sample members located at any address/telephone number (i.e., including those uncovered during tracing). This latter measure is indicative of the success of both the locating process itself and the utility of extracted information in providing *at least* a starting point for locating. Statistics reported in the table are based on a student sample of 81,451, plus the 18,491 parents identified for telephone interviews.[2]

Overall, 84 percent of sampled students and 85 percent of parents were located. (Included among sample members not successfully located through extracted contact information are 2,560 students, and some number of their associated parents, for whom institutional data included no locating information.) The high percentage of B&B sample members located (93 percent) reflects the significant concentration of effort in contacting and interviewing these sample members for the longitudinal study. Graduate and first-professional students were also fairly likely to be located through extracted addresses (89 percent). "Other undergraduates," however, which include students in non-baccalaureate programs, had the lowest rate of locating success (84 percent), perhaps partially due to the fact that non-baccalaureate students tend to be a relatively more transient group than students in either four-year undergraduate programs or graduate/first-professional programs.

That only 57 percent of students and parents were located at an extracted address/telephone number was not a completely unexpected result because students tend to move often (and do not always update institutional information).[3] The difference in success rates across respondent groups can be readily understood by considering the nature of each population represented. Graduate and first-professional students, for example, who generally tend to be older and more established than undergraduates, were the respondent group most likely to be located at the extracted address (71 percent).

In actuality, information obtained was frequently fragmented (e.g., telephone numbers without associated addresses or addresses without telephone numbers, locator information without names).

A total of 722 student records were deleted from the full sample of 82,173 since address/telephone-level locating results had been inadvertently contaminated during operations.

Because final address/phone-level results did not allow indication of students and parents contacted at the same preloaded address/telephone, location rates are probably underestimated.

The most difficult group to locate at one of the preloaded addresses was the "unspecified" student group, for whom institutional data were so minimal that even year in institution was not available. This rate among parents was also low (55 percent), but may reflect the explicit decision made during telephone interviewing to reduce parent locating efforts in order to concentrate more time and effort on locating student sample members.

B&B sample members were another respondent group less likely to be located at one of the extracted address (57 percent). This is again not a surprising finding considering that B&B sample members were, by definition, new baccalaureate recipients and, therefore, would be relocating with entrance into the labor market or post-baccalaureate study. Although not at a preloaded address, members of the B&B group were nonetheless "locatable" *through* information provided by the institutional records.

While undergraduates in baccalaureate programs should have been about as locatable as the graduate/first-professional student group, undergraduates in non-baccalaureate programs (e.g., three-year or less programs) almost certainly contained some individuals who completed their program and relocated like the B&B students.

Refusal conversion

Interviewers were trained to deal with an extensive range objections, problems and concerns expressed by respondents. Scripted responses were provided for common objections. These responses prepared interviewers to alleviate issues of confidentiality, legitimacy, eligibility to participate in the study, and a host of other matters. Quite often respondents would seek to delay the interview, and interviewers were trained to overcome this objection as well. However, when scheduling a call at a later time was necessary, the CATI scheduling capability facilitated the process of completing the interviewer by maintaining a queue that assigned the call to the scheduled time.

Table 5.1 Utility of Student Locating Information Obtained during Records Abstraction

Respondent Group	Total Count	Located through Extracted Address/Telephone[a]		Located at Extracted Address/Telephone[b]	
		Count	Percent	Count	Percent
Total	99,942	84,256	84.3	57,392	57.4
Parents[c]	18,491	15,718	85.0	10,086	54.6
Students[d]	81,451	68,538	84.2	58,563	58.1
B & B	14,412	13,366	92.7	8,153	56.6
Other Undergraduates	45,410	38,117	83.9	27,946	61.5
Other Graduates/First-Professionals	13,581	12,041	88.7	9,606	70.7
Unspecified	8,048	5,014	62.3	1,601	19.9

Note: Locating information was obtained from the institutions during record abstraction for use in contacting 81,451 student sample members for the telephone interview. Among students contributing to these analyses, 18,491 were selected for parent interviews. During operations, address/phone-level locating results for 722 records were inadvertently deleted, and thus were not included in the analyses. All percentages are based on row total counts.

[a] Students and parents located through data extracted during record abstraction were defined as those who answered any one of the first three interview items (or the first item in the parent interview), or whose final result code indicated at least partial administration of an interview, or whose final result code indicated that location of the sample member was in some other way resolved (e.g., located but out of the country at the time of the interview). These cases were not necessarily contacted at the address/telephone number obtained during institutional records abstraction, but such contact information would have served as a starting point for tracing.

[b] Defined as students and parents who were located at one of the addresses/telephone numbers extracted during record abstraction. Because final address/phone-level results did not allow indication of students and parents contacted at the same preloaded address/telephone, location rates are probably underestimated.

[c] The parent base was identified as those student records with the parent interview flag set.

[d] Determination of student level was made based on a year in institution variable available for those in the final analysis files (see Chapter 6). For those not included in these files, student level was assigned according to a student level variable preloaded from extracted data. A total of 8,048 original sample members could not be classified by either method and are shown in the table as "Unspecified."

Language problem recalls

When an interviewer encountered a problem with a respondent's capability of understanding English, the interviewer sought to speak to someone else in the household who could translate between English and the respondent's language. This procedure was also followed in the case of the hearing impaired. If Spanish was the respondent's mother tongue, the interviewer referred the call to an interviewer proficient in Spanish.

Toll-free 800 number

An "800" number was used to facilitate return telephone calls. This feature was especially useful for students or recent graduates who had no telephone on their own, but who could be reached through the mail or through family or friends, or by leaving a message with the receptionist in the student dormitory. Also, when respondents questioned the authenticity of the study, interviewers gave them the toll-free number to call; this quelled their doubts about the study's legitimacy.

Quality control

The telephone centers at Abt and RTI are equipped with a system to monitor interviewers to ensure that they are observing procedures appropriately and entering accurate and complete data. Roughly ten percent of the calls on each shift were monitored; each interviewer was monitored at least once during each shift. Supervisors who monitored the calls provided feedback quickly and constructively, so interviewer performance was enhanced; opportunities for improvement were realized and positive behavior was reinforced. The monitoring process was geared to maintaining production rates, ensuring consistency and enhancing the quality of the operation.

Interviews were monitored for twenty six performance dimensions, including aspects such as identifying the interviewer, the study and its sponsor by name, noting the propose of the study, verifying the respondent's phone number and address, conveying an assurance of confidentiality, and explaining the voluntary nature of cooperation. Further, the supervisor noted whether the interviewer's use of persuasion, whether the interviewer changed the question wording or mispronounced words, whether skip patterns were observed, whether probing was appropriate, whether feedback was used, whether responses were properly entered and whether the correct result code was marked at the conclusion of the interview.

Also, the interviewer's professionalism was evaluated, including attributes such as courtesy, assertiveness, persuasiveness, knowledge of the study, neutral presentation and ability to maintain control of the interview. The pace, clarity and volume of the interviewer's voice was rated, along with the interviewer's use of CATI functions, the thoroughness of comments.

Once the monitoring process for an individual interviewer was completed, the supervisor appraised the interviewer as either below average, average of average, and shared the evaluation with the interviewer, along with feedback intended to improve (or reinforce) performance, before the end of the shift.

5.4 Response rates

5.4.1 Student CATI Response Rates

Attempts were made to locate and interview all sample students, except those who had been identified as ineligible based on the data abstracted from the student records. Students who were deceased, out of the country, or otherwise not available for telephone interviewing (e.g., incarcerated) were classified as ineligible for CATI. The number of sample students who were ultimately classified as eligible for CATI was 77,003.

Students were defined to be CATI respondents if they completed at least Section A of the CATI interview. Of the 77,003 CATI-eligible sample students, 52,964 (including 298 whose data were lost because of unrecoverable system hardware failures), or 68.8 percent of the CATI eligibles, were CATI respondents as shown in Table 5.2. In addition, Table 5.2 shows that the weighted and weighted effective student CATI response rates were 67.8 percent and 72.0 percent, respectively. The weighted effective response rate for each stratum for which a nonresponse subsample was selected can be represented as

$$R = R_1 + (1 - R_1) R_2 \ , \qquad (26)$$

where R_1 is the Phase 1 response rate and R_2 is the response rate achieved among those units selected for the nonresponse follow-up subsample. The student CATI response rates were lowest (55.7 percent) among sample students selected from private, for-profit, less-than-2-year institutions. Because NPSAS analysis files are based on CADE and CATI data, readers should also refer to the overall response rates described in Chapter 6.

5.4.2 Response Rates for Parent CATI Interviews

The CATI response rates for parent interviews are shown in Table 5.3. The overall unweighted and weighted parent response rates are comparable, 61.8 percent and 62.4 percent, respectively. The weighted effective parent response rate is slightly lower, 61.4 percent, because the response rate among sample parents in the nonresponse follow-up subsample was slightly lower than the rate achieved in the Phase 1 sample. The parent CATI response rates were lowest (55.1 percent) among the parents of students sampled from private, for-profit institutions. Because of the emphasis on R_2, the response rate among those cases selected for the nonresponse subsample, a low response rate obtained in the subsample may result in the weighted effective response rate being less than the overall weighted response rate. During the subsample follow-up phase of the data collection, in part due to budget and schedule constraints, more resources were allocated to the student CATI. This resulted in lower weighted effective response rates in the parent telephone interview.

Table 5.2 Student Response Rates for Computer-Assisted Telephone Interviews, Given Institutional Response for Student Sampling

Type of Student	Eligible Sample Students[a]	Participating Students[b]	Unweighted Response Rate	Weighted Response Rate	Weighted Effective Response Rate
All Students	77,003	52,964	68.8	67.8	72.0
Institutional Level:					
Less-than-2-year	9,423	5,194	55.1	59.5	62.0
2-year	10,618	6,909	65.1	65.7	69.5
Bachelors	5,695	3,839	67.4	64.4	67.3
Masters	18,783	13,633	72.6	70.8	75.4
Doctors	8,354	5,892	70.5	69.3	74.2
First-professional	24,130	17,497	72.5	71.8	76.5
Institutional Control:					
Public	47,283	33,756	71.4	68.6	72.9
Private, not-for-profit	21,173	14,415	68.1	67.2	71.2
Private, for-profit	8,547	4,793	56.1	57.6	60.5
Institutional Sector:					
Public, less-than-2-year	1,797	1,039	57.8	67.3	69.0
Public, 2-year	8,482	5,680	67.0	65.9	69.8
Public, Bachelors	1,713	1,194	69.7	67.3	70.3
Public, Masters	12,591	9,263	73.6	71.7	76.4
Public, Doctors	6,642	4,800	72.3	71.6	75.7
Public, First-professional	16,058	11,780	73.4	72.5	78.1
Private, not-for-profit, 2-year or less	1,782	961	53.9	62.6	65.1
Private, not-for-profit, Bachelors	3,730	2,476	66.4	62.8	66.5
Private, not-for-profit, Masters	5,922	4,195	70.8	69.0	73.6
Private, not-for-profit, Doctors or First-professional	9,739	6,783	69.6	68.5	72.5
Private, for-profit, less-than-2-year	6,624	3,690	55.7	54.7	57.9
Private, for-profit, 2-year or more	1,923	1,103	57.4	61.3	63.9
Student Level:					
Less-than-2-year enrollee	9,352	5,127	54.8	59.3	61.8
2-year enrollee	10,439	6,739	64.6	65.2	69.1
Baccalaureate recipient	15,859	11,897	75.0	78.5	84.5
Other undergraduate	26,946	18,935	70.3	68.8	73.3
Graduate student	9,863	7,086	71.8	71.0	74.6
First-professional student	4,544	3,180	70.0	71.9	75.1
Aid and dependency status:[c]					
Aided, dependent	11,488	8,658	75.4	75.1	80.2
Aided, independent	15,578	10,707	68.7	68.6	73.0
Aided, unknown	5,662	4,122	72.8	72.8	76.0
Not aided, 23 or younger	16,996	12,043	70.9	68.8	73.6
Not aided, 24 or older	19,769	13,326	67.4	65.7	68.9
Not aided, age unknown	2,282	1,353	59.3	59.0	66.7
Aid status unknown	5,228	2,755	52.7	55.9	58.6

Table 5.2 Student Response Rates for Computer-Assisted Telephone Interviews, Given Institutional Response for Student Sampling

Type of Student	Eligible Sample Students[a]	Participating Students[b]	Unweighted Response Rate	Weighted Response Rate	Weighted Effective Response Rate
Gender:[c]					
Male	31,727	22,121	69.7	67.9	72.2
Female	39,430	27,948	70.9	69.4	73.4
Unknown	5,846	2,895	49.5	52.7	56.9
Local Residence:[c]					
Campus Housing	5,573	4,262	76.5	75.2	80.6
Off campus (not with parents)	17,240	12,019	69.7	69.3	74.0
With Parents	4,567	3,345	73.2	75.1	79.3
Not specified	49,623	33,338	67.2	66.3	70.3
Student Level:[c]					
Freshman (1st year undergrad)	20,092	13,911	69.2	69.8	74.2
Sophomore (2nd year undergrad)	8,469	6,273	74.1	73.3	77.3
Junior (3rd year undergrad)	6,825	5,141	75.3	74.9	77.2
Senior (4th/5th year undergrad)	21,112	15,738	74.5	75.1	79.9
Undergraduate (unknown level)	5,385	1,079	20.0	21.8	24.8
Graduate student	10,469	7,551	72.1	71.3	75.0
First-professional student	4,651	3,271	70.3	72.3	75.5
Race/ethnicity:[c]					
White, non-Hispanic	46,032	34,219	74.3	72.1	76.7
Black, non-Hispanic	6,297	4,078	64.8	62.0	64.7
Hispanic	4,572	2,869	62.8	64.3	68.6
American Indian or Alaskan Native	582	358	61.5	50.1	54.2
Asian or Pacific Islander	3,252	2,186	67.2	67.1	71.2
Other	819	528	64.5	62.6	61.2
Unknown	15,449	8,726	56.5	58.4	62.3

[a] 2,266 study-eligible students were not eligible for CATI because of the following reasons: 87 were deceased, 805 were out of the country, 77 were otherwise unavailable (e.g., incarcerated), and 1,297 were classifed as ineligible during CATI but later determined to be eligible (typically enrolled but dropped out before completing the term).

[b] Includes 298 students whose data were lost because of unrecoverable system hardware failures.

[c] Based on student record abstraction (CADE).

Table 5.3 Parent Response Rates for Computer-Assisted Telephone Interviews, Given Institutional Response for Student Sampling

Type of Student	Sample Parents	Participating Parents[a]	Unweighted Response Rate	Weighted Response Rate	Weighted Effective Response Rate
All Students	18,129	11,207	61.8	62.4	61.4
Institutional Level:					
Less-than-2-year	1,099	623	56.7	67.4	66.2
2-year	1,954	1,199	61.4	61.7	60.8
Bachelors	1,518	928	61.1	59.9	58.9
Masters	4,962	3,236	65.2	64.9	63.7
Doctors	2,439	1,494	61.3	61.9	61.2
First-professional	6,157	3,727	60.5	61.7	60.5
Institutional Control:					
Public	12,538	7,871	62.8	63.0	61.8
Private, not-for-profit	4,453	2,709	60.8	60.5	59.6
Private, for-profit	1,138	627	55.1	57.3	57.9
Institutional Sector:					
Public, less-than-2-year	185	116	62.7	85.9	83.6
Public, 2-year	1,613	996	61.7	61.4	60.3
Public, Bachelors	446	288	64.6	62.8	60.4
Public, Masters	3,470	2,280	65.7	65.4	64.2
Public, Doctors	2,050	1,287	62.8	63.9	63.3
Public, First-professional	4,774	2,904	60.8	62.3	61.0
Private, not-for-profit, 2-year or less	205	125	61.0	73.6	77.5
Private, not-for-profit, Bachelors	1,014	614	60.6	58.6	57.9
Private, not-for-profit, Masters	1,462	940	64.3	63.7	62.0
Private, not-for-profit, Doctors or First-professional	1,772	1,030	58.1	58.0	57.2
Private, for-profit, less-than-2-year	828	462	55.8	54.5	54.2
Private, for-profit, 2-year or more	310	165	53.2	60.5	62.0
Student Level:					
Less-than-2-year enrollee	1,089	616	56.6	67.4	66.2
2-year enrollee	1,921	1,180	61.4	61.8	61.0
Baccalaureate recipient	7,893	4,846	61.4	61.6	62.1
Other undergraduate	7,078	4,477	63.3	62.8	61.0
Graduate student	128	76	59.4	62.4	60.9
First-professional student	20	12	60.0	81.2	81.2
Aid and dependency status:[b]					
Aided, dependent	2,089	1,416	67.8	64.8	64.3
Aided, independent	1,922	1,112	57.9	56.3	58.4
Aided, unknown	2,010	1,318	65.6	67.8	67.1
Not aided, 23 or younger	10,149	6,074	59.8	62.2	60.6
Not aided, 24 or older	512	385	75.2	67.2	67.4
Not aided, age unknown	413	227	55.0	53.7	50.4
Aid status unknown	1,034	675	65.3	62.8	61.9

Table 5.3 Parent Response Rates for Computer-Assisted Telephone Interviews, Given Institutional Response for Student Sampling

Type of Student	Sample Parents	Participating Parents[a]	Unweighted Response Rate	Weighted Response Rate	Weighted Effective Response Rate
Gender:[b]					
Male	7,911	4,974	62.9	63.3	62.0
Female	9,357	5,715	61.1	62.0	61.3
Unknown	861	518	60.2	57.5	55.4
Local Residence:[b]					
Campus Housing	1,166	801	68.7	69.2	68.3
Off campus (not with parents)	2,373	1,467	61.8	58.4	58.9
With Parents	858	552	64.3	65.2	66.2
Not specified	13,732	8,387	61.1	62.4	61.0
Student Level:[b]					
Freshman (1st year undergrad)	4,339	2,688	61.9	62.8	62.0
Sophomore (2nd year undergrad)	2,302	1,461	63.5	63.3	61.6
Junior (3rd year undergrad)	1,914	1,203	62.9	62.2	60.5
Senior (4th/5th year undergrad)	9,066	5,545	61.2	61.2	60.7
Undergraduate (unknown level)	181	95	52.5	52.2	52.4
Graduate student	282	182	64.5	64.4	63.8
First-professional student	45	33	73.3	83.1	80.8
Race/ethnicity:[b]					
White, non-Hispanic	12,822	8,271	64.5	65.7	64.5
Black, non-Hispanic	1,212	725	59.8	61.9	60.9
Hispanic	791	425	53.7	54.0	53.8
American Indian or Alaskan Native	83	49	59.0	60.6	59.9
Asian or Pacific Islander	654	268	41.0	38.8	40.6
Other	155	62	40.0	44.2	41.9
Unknown	2,412	1,407	58.3	56.7	55.1

[a]Includes 30 parents whose data were lost because of hardware problems.

[b]Based on student record abstraction (CADE).

5.4.3 Interview Breakoff

Not all of the students and parents who were located provided complete interviews. Once sample members were contacted by telephone, some broke off the interview after a few initial questions and refused to continue. Other contacted sample members completed one or more (but not all) sections before terminating the interview. Still other sample members could not (or would not) continue, because they spoke insufficient English[4]. All cases of these types were defined as representing interview "breakoff". Because the raw CATI files contained incomplete data on a number of qualifiers of interest, examination of breakoff rates for NPSAS:93 was restricted to those cases in the final analysis files (see Chapter 6) who had at least started the interview[5].

Breakoff rates for both students and parents are shown in Table 5.4; students are further broken out in this table by corrected major student stratum (i.e., B&B, other undergraduate students, and other graduate/first-professional students[6]. A student breakoff rate of approximately 10.4 percent is quite consistent over the three student types considered, despite concerted efforts to reduce this rate in the longitudinal B&B sample. The B&B breakoff rate shown may reflect improvement to a higher underlying base breakoff rate in this group, for whom the interview was longer. Parent breakoff rates are markedly lower than those for students; this probably reflects the considerably shorter administration time for the parent interview.

Table 5.5 shows student breakoff rates by control and highest level of offering of the institution from which the sample member was selected. Compared to students from public postsecondary institutions, students from independent (i.e., private, not-for-profit) institutions break off at marginally (but significantly -- $p \leq .001$) higher rates (9 percent and 11 percent, respectively). But, students at private, for-profit institutions break off at markedly higher rates (over 17 percent) than those at either public or independent postsecondary institutions. These differences probably reflect underlying differences in the typical educational clients in these different institution sectors.

Breakoff rates also vary over level of offering, within the public and private sectors of institutional control. Within public institutions, breakoff rates over increasing level of offering appear to be a quadratic relationship; rates decline from either extreme to a nadir at the institutions offering only Bachelor's degrees (this could be a function of institution size, because state colleges offering only a four-year program are typically smaller than either the large public technical institutions or the large universities that offer advanced degrees). Within

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Bilingual (English/Spanish) interviewers were used at both sites (principally for the Puerto Rican sample and for monolingual Spanish speaking parents; however, it was infeasible to maintain bilingual interviewers for the large number of other languages spoken among some parents.

"At least starting the interview" was defined as those who had completed at least one section of the interview or, if not, had a timing value greater than zero for interview Section 1. Restricting these analyses to the final analysis file cases should result in an underestimate of breakoff rates, of unknown (but likely small) magnitude.

Because of the definitions used plus the nature and timing of the sampling, B&B sample members appear in both the undergraduate and graduate/first professional final analysis data files.

independent institutions, the principal outlier is the less-than-two-year institutions, within which student breakoff rates exceeded 20 percent. While student sample size in this cell is generally sufficient to provide stable estimates, it should be kept in mind that the number of unique institutions contributing students to this cell is quite small. Consequently, the difference could be mainly attributable to characteristics of students in one or two institutions.

Table 5.4 Interview Breakoff Rates by Type of Student

Type of Student	Total Starting Interview	Interview Breakoff [a]	
		Count	Percent [b]
Overall	68,505	6,146	9.0
Student Total [c]	57,224	5,956	10.4
B&B	12,899	1,367	10.6
Other undergraduate	33,182	3,444	10.4
Other graduate/first-professional	11,143	1,145	10.3
Parent	11,281	190	1.7

Note: Statistics are based on the 57,224 students and 11,281 parents retained in the final analysis files, to whom the interview was at least partially administered; percentages are based on total counts within the row.

[a] An interview was determined to be a "break off" if a sample member started the interview but did not answer enough items in the first section to be considered a "partial" respondent.

[b] Restricting these analyses to cases in the final analysis files should result in breakoff rate underestimates, of some unknown (but expected small) magnitude.

[c] Students are further divided by the three major sampling strata as finally corrected; because of the definitions used plus the nature and timing of sampling, B&B sample members appear in both the undergraduate and graduate/first-professional final analysis data files.

Breakoff rates were also examined by race, gender, and year in institution (in each case crossed by major student stratum); results are shown in Tables 5.6, 5.7, and 5.8, respectively. Within each student stratum and overall, a higher breakoff propensity was observed for blacks; a lower propensity was observed for Asian/Pacific Islanders and student's of "other" races. With the exception of the clearly confounded rate for those of indeterminate gender (indeterminate in most cases because the sample member did not progress far enough in the interview to reach the gender question), breakoff rates were not meaningfully related to gender. Discounting results based on less than 100 observations, the major difference in breakoff rate, as a function of year in institution, was the markedly higher rate observed for unclassified undergraduates. This latter result is also partially confounded, since individuals sampled as undergraduates but for whom no information was otherwise obtained (i.e., were not abstracted from institutional records and students didn't get far enough into the interview to reach the year in institution question) as well as those legitimately reported as "unclassified."

Table 5.5 Student Interview Breakoff Rates by Institutional Sector of NPSAS Institution

Institutional Sector		Total Starting Interview	Interview Breakoff [b]	
Control	Highest Level of Offering [a]		Count	Percent [c]
Public	Total	35,958	3,274	9.1
	Less than two years	1,082	102	9.4
	Two to less than four years	5,938	505	8.5
	Bachelors-granting	1,254	88	7.0
	Masters-granting	9,830	838	8.5
	Doctorate-granting	5,166	495	9.6
	First-professional	12,688	1,246	9.8
Private not-for-profit	Total	15,739	1,724	11.0
	Less than two years	564	117	20.7
	Two to less than four years	534	46	8.6
	Bachelors-granting	2,686	285	10.6
	Masters-granting	4,539	465	10.2
	Doctorate-granting	1,194	129	10.8
	First-professional	6,222	682	11.0
Private for-profit	Total	5,527	958	17.3
	Less than two years	4,227	719	17.0
	Two years or more	1,300	239	18.4

Note: Statistics are based on the 57,224 students retained in the final analysis files, to whom the interview was at least partially administered; percentages are based on total counts within the row.

[a] Some cells were combined to maintain adequate sample sizes.

[b] An interview was determined to be a "break off" if a sample member started the interview but did not answer enough items in the first section to be considered a "partial" respondent.

[c] Restricting these analyses to cases in the final analysis files should result in breakoff rate underestimates, of some unknown (but expected small) magnitude.

Table 5.6 Interview Breakoff Rates by Student Stratum and Race

Student Characteristics		Total Starting Interview	Interview Breakoff [c]	
Stratum [a]	Race [b]		Count	Percent [d]
Overall	Total	57,224	5,956	10.4
	White	43,627	4,572	10.5
	Black	5,811	764	13.2
	American Indian/Alaskan Native	529	54	10.2
	Asian/Pacific Islander	3,029	286	9.4
	Other	4,228	280	6.6
B&B	Total	12,899	1,367	10.6
	White	10,702	1,150	10.8
	Black	854	105	12.3
	American Indian/Alaskan Native	90	10	11.1
	Asian/Pacific Islander	562	55	9.8
	Other	691	47	6.8
Other Undergraduate	Total	33,182	3,444	10.4
	White	24,048	2,469	10.3
	Black	4,255	578	13.6
	American Indian/Alaskan Native	358	38	10.6
	Asian/Pacific Islander	1,537	154	10.0
	Other	2,984	205	6.9
Other Graduates/First-Professionals	Total	11,143	1,145	10.3
	White	8,877	953	10.7
	Black	702	81	11.5
	American Indian/Alaskan Native	81	6	7.4
	Asian/Pacific Islander	930	77	8.3
	Other	553	28	5.1

Note: Statistics are based on the 57,224 students retained in the final analysis files, to whom the interview was at least partially administered; percentages are based on total counts within the row.

[a] Reflects final classification, because of the definitions used plus the nature and timing of sampling, B&B sample members appear in both the undergraduate and graduate/first-professional final analysis data files.

[b] The "other" category shown includes those sample members reporting other race as well as those for whom race was indeterminate.

[c] An interview was determined to be a "break off" if a sample member started the interview but did not answer enough items in the first section to be considered a "partial" respondent.

[d] Restricting these analyses to cases in the final analysis files should result in breakoff rate underestimates, of some unknown (but expected small) magnitude.

Table 5.7 Interview Breakoff Rates by Gender of Student Sample Member

Student Characteristics		Total Starting Interview	Interview Breakoff [c]	
Stratum [a]	Gender [b]		Count	Percent [d]
Overall	Total	57,224	5,956	10.4
	Male	25,214	2,529	10.0
	Female	31,795	3,225	10.1
	Indeterminate	215	202	94.0
B&B	Total	12,899	1,367	10.6
	Male	5,632	607	10.8
	Female	7,228	726	10.0
	Indeterminate	39	34	87.2
Other Undergraduate	Total	33,182	3,444	10.4
	Male	14,123	1,339	9.5
	Female	18,918	1,970	10.4
	Indeterminate	141	135	95.7
Other Graduate/First-Professional	Total	11,143	1,145	10.3
	Male	5,459	583	10.7
	Female	5,649	529	9.4
	Indeterminate	35	33	94.3

Note: Statistics are based on the 57,224 students retained in the final analysis files, to whom the interview was at least partially administered; percentages are based on total counts within the row.

[a] Reflects final classification; because of the definitions used plus the nature and timing of sampling, B&B sample members appear in both the undergraduate and graduate/first-professional final analysis data files.

[b] Although gender of sample member was updated using all available information, this classification includes sample members refusing to report gender (or not getting to the gender question) during the interview and for whom no other information on gender was available.

[c] An interview was determined to be a "break off" if a sample member started the interview but did not complete it; this includes "partial" interview (not all sections completed) as well as those not completing enough questions to be classified as a partial respondent.

[d] Restricting these analyses to cases in the final analysis files should result in breakoff rate underestimates, of some unknown (but expected small) magnitude.

Table 5.8 Interview Breakoff Rates by Student Stratum and Level in Institution

Student Characteristics		Total Starting Interview	Interview Breakoff [c]	
Stratum [a]	Level in Institution [b]		Count	Percent [d]
Overall	Total	57,224	5,956	10.4
	Freshman	15,087	1,677	11.1
	Sophomore	6,679	605	9.1
	Junior	5,507	492	8.9
	Senior	17,034	1,790	10.5
	Unclassified Undergraduate	1,179	189	16.0
	Graduate	8,155	798	9.8
	First-professional	3,583	405	11.3
B&B	Total	12,899	1,367	10.6
	Senior	12,304	1,309	10.6
	Graduate	502	51	10.2
	First-professional	93	7	7.5
Other Undergraduates	Total	33,182	3,444	10.4
	Freshman	15,087	1,677	11.1
	Sophomore	6,679	605	9.1
	Junior	5,507	492	8.9
	Senior	4,730	481	10.2
	Unclassified	1,179	189	16.0
Other Graduates/First-Professionals	Total	11,143	1,145	10.3
	Graduate	7,653	747	9.8
	First-professional	3,490	398	11.4

Note: Statistics are based on the 57,224 students retained in the final analysis files, to whom the interview was at least partially administered; percentages are based on total counts within the row.

[a] Reflects final classification; because of the definitions used plus the nature and timing of sampling, B&B sample members appear in both the undergraduate and graduate/first-professional final analysis data files.

[b] Generally, level in institution was based on student's status at the beginning of the school year. If requisite information was missing, however, level in institution was estimated based on input variables for degree program, the student sampling stratum, and financial aid information; the unclassified undergraduate category includes those for whom exact undergraduate classification could not be otherwise determined as well as those reporting "unclassified" or "special student".

[c] An interview was determined to be a "break off" if a sample member started the interview but did not complete it; this includes "partial" interview (not all sections completed) as well as those not completing enough questions to be classified as a partial respondent.

[d] Restricting these analyses to cases in the final analysis files should result in breakoff rate underestimates, of some unknown (but expected small) magnitude.

5.4.4 Indeterminate Responses

Both the student and parent CATI programs were designed to accommodate responses of "refusal" and "don't know" to any single question. Typically, refusal responses are given for items considered too sensitive by the respondent. "Don't know" responses may be given for any one of several reasons: (1) the respondent misunderstands the question wording, and is not offered subsequent explanation by the interviewer; (2) the respondent is hesitant to provide "best guess" responses, with insufficient prompting from the interviewer; (3) the respondent truly does not know the answer; or (4) the respondent chooses to respond with "don't know" as an implicit refusal to answer the question. Whenever they occur, indeterminate responses in the data set must be resolved by imputation or otherwise dealt with during analysis.

Summaries of maximum refusal and "don't know" responses for undergraduate, graduate and first-professional, and parent respondents are shown in Tables 5.9, 5.10, and 5.11 respectively. In each table, statistics are provided separately, by interview section, for the items receiving the highest percentage of refusal responses, "don't know" responses, and a "combination" of the two types of indeterminate responses. Indeterminate response percentages were calculated only for those respondents reaching a given item and for whom the item was applicable.

In general, item refusal rates greater than one percent are considered high. As shown in the tables, most of the maximum refusal rates were in excess of one percent. Not surprisingly, items with maximum refusal rates tended to be among the most sensitive items -- income and current financial status. Graduate/first-professional students and parents were more likely to refuse these items than were undergraduate students.

Many of the items with the highest refusal rates among undergraduates also had the highest refusal rates among graduate/first-professional students. Monthly expenses, loan amounts, savings spent for institution expenses, student and parent income, current financial status, and receipt of remedial instruction were those items most likely to be refused by both undergraduates and graduate/first-professional students. However, graduate and first-professional students consistently refused these items at higher rates than undergraduate students.

The types of interview items receiving the highest "don't know" rates, that is, in excess of five percent, fall into two categories: those appearing sensitive (i.e., SAT scores, student income, parent income, and parent support for the student), and those that appear wholly innocuous (i.e., commuting expenses, highest education expected, and anticipated community service). The difference between the two types of "don't know" responses is punctuated by the difference in mean rates: 25.5 percent for the sensitive items and 7.5 percent for those not considered sensitive. Reflected in this high rate is the likelihood that respondents offered "don't know" as an implicit refusal to answer the particular question. Consistent with findings for the student interview, items related to income and support for education were most likely to evoke "don't know" responses from parents as well; the income tax liability item in the parent interview received the highest rate of "don't know" responses (46 percent).

The "combined" indeterminate rates (refusal and "don't know") showed that the items with the highest "don't know" rates were also most likely to have the highest overall indeterminate rates, with the exception of the item asking graduate and first-professional students about their undergraduate loan amounts through 6/93. This result is not unexpected since "don't know" responses generally occur with considerably greater frequency than refusals for any given item, and thus tend to contribute much more to the combined indeterminacy rate. Among both student and parent respondents, those items with consistently high combined rates were those asking for parent income and income tax liability for 1991, particularly sensitive topics.

Table 5.9 Items Receiving Highest Rates of Indeterminate CATI Responses Among Undergraduate Respondents

Interview Section	Type of Indeterminate Response[a]	Item	Count	Percent[b]
Institution Enrollment	Refusal	Month when respondent completed post-secondary course	1,419	3.4
	Don't Know	Total or composite SAT score[c]	6,689	19.0
	Combined	Total or composite SAT score[c]	6,772	19.2
Enrollment and Costs	Refusal	Monthly expenses-for rent or mortgage, utilities, etc.[c]	648	1.6
	Don't Know	Amount spent commuting to class	3,402	8.2
	Combined	Amount spent commuting to class	3,485	8.4
Financial Aid	Refusal	Amount borrowed for undergraduate education through 6/93[c]	210	0.6
	Don't Know	Amount borrowed for undergraduate education through 6/93	1,703	4.5
	Combined	Amount borrowed for undergraduate education through 6/93[c]	1,913	5.1
Additional Sources of Support	Refusal	Savings used for 1992-93 institution expenses[c]	462	1.1
	Don't Know	In-kind support from parents	5,200	24.6
	Combined	In-kind support from parents	5,327	25.2
Employment	Refusal	Income from all jobs, 1/92 to 6/93[c]	1,334	4.1
	Don't Know	Income from all jobs, 1/92 to 6/93[c]	4,346	13.4
	Combined	Income from all jobs, 1/92 to 6/93[c]	5,680	17.5
Educational Expectations	Refusal	Highest level of education expected to be completed	127	0.3
	Don't Know	Highest level of education expected to be completed	3,111	7.7
	Combined	Highest level of education expected to be completed	3,238	8.0
Citizenship	Refusal	Race[c]	313	0.8
	Don't Know	Community service anticipated in next year[c]	2,685	6.6
	Combined	Community service anticipated in next year[c]	2,777	6.8

Table 5.9 Items Receiving Highest Rates of Indeterminate CATI Responses Among Undergraduate Respondents

Interview Section	Type of Indeterminate Response[a]	Item	Count	Percent[b]
Parental Characteristics	Refusal	Parent's total income in 1992	3,625	9.5
	Don't Know	Parent's total income in 1991[c]	17,107	44.7
	Combined	Parent's total income in 1991[c]	20,681	53.1
Financial Status	Refusal	Current worth of cash, savings, and checking[c]	4,358	10.8
	Don't Know	1992 income prior to taxes	4,960	13.7
	Combined	1992 income prior to taxes	7,055	17.7
Demographics	Refusal	Ever received remedial instruction[c]	107	0.3
	Don't Know	Hours of remedial instruction in reading	194	3.4
	Combined	Hours of remedial instruction in reading	197	3.5

Note: A total of 52,697 respondents were identified as undergraduates according to their year in institution at the beginning of the NPSAS year or when first enrolled at the NPSAS institution during that year (whichever was later).

[a] Respondents could refuse to answer any question or indicate that they did not know the answer to any question. Items with the highest rates of the combined indeterminate responses are also shown as "combined."

[b] The percent of respondents was calculated only for those respondents who reached the item and for whom it was applicable.

[c] This item also yielded the highest rate for graduate and first-professional students.

Table 5.10 Items Receiving Highest Rates of Indeterminate CATI Responses Among Graduate and First-Professional Respondents

Interview Section	Type of Indeterminate Response[a]	Item	Count	Percent[b]
Institution Enrollment	Refusal	Month expected to complete degree	209	3.8
	Don't Know	Total or composite SAT score[c]	2,624	25.3
	Combined	Total or composite SAT score[c]	2,658	25.7
Enrollment and Costs	Refusal	Monthly expenses for rent or mortgage, utilities, etc.[c]	357	3.4
	Don't Know	Monthly amount for personal expenses	840	7.9
	Combined	Monthly amount for personal expenses	1,141	10.7
Financial Aid	Refusal	Amount borrowed for undergraduate education through 6/93[c]	86	0.8
	Don't Know	Federal loan debt through 6/93	357	6.6
	Combined	Amount borrowed for undergraduate education through 6/93[c]	440	4.2
Additional Sources of Support	Refusal	Savings used for 1992-93 institution expenses[c]	179	1.7
	Don't Know	Savings used for 1992-93 institution expenses	752	7.1
	Combined	Savings used for 1992-93 institution expenses	931	8.8
Employment	Refusal	Income from all jobs, 1/92 to 6/93[c]	638	7.7
	Don't Know	Income from all jobs, 1/92 to 6/93[c]	538	6.5
	Combined	Income from all jobs, 1/92 to 6/93[c]	1,176	14.3
Educational Expectations	Refusal	Satisfaction with security measures taken by institution	35	0.3
	Don't Know	GRE verbal score	1,323	58.9
	Combined	GRE verbal score	1,339	59.6
Citizenship	Refusal	Race[c]	111	1.1
	Don't Know	Community service anticipated in next year[c]	530	5.0
	Combined	Community service anticipated in next year[c]	550	5.2

Table 5.10 Items Receiving Highest Rates of Indeterminate CATI Responses Among Graduate and First-Professional Respondents

Interview Section	Type of Indeterminate Response[a]	Item	Count	Percent[b]
Parental Characteristics	Refusal	Parent's total income in 1991	1,252	12.7
	Don't Know	Parent's total income in 1991[c]	4,048	41.0
	Combined	Parent's total income in 1991[c]	5,300	53.7
Financial Status	Refusal	Current worth of cash savings, and checking[c]	1,667	15.9
	Don't Know	Current worth of retirement and pension	1,711	16.3
	Combined	Current worth of retirement and pension	2,747	26.1
Demographics	Refusal	Ever received remedial instruction[c]	21	0.2
	Don't Know	Ever received remedial instruction	16	0.2
	Combined	Ever received remedial instruction	37	0.4

Note: A total of 13,399 were identified as graduate and first-professional students according to their year in institution at the beginning of the NPSAS year or when first enrolled at the NPSAS institution during that year (whichever was later).

[a] Students could refuse to answer any question or indicate that they did not know the answer to any question. Items with the highest rates of the combined indeterminate responses are also shown as "combined."

[b] The percent of students was calculated only for those students who reached the item and for whom it was applicable.

[c] This item also yielded the highest rate for undergraduate students.

Table 5.11 Items Receiving Highest Rates of Indeterminate Responses Among Parents

Interview Section	Type of Indeterminate Response[a]	Item	Count	Percent[b]
Parental Support	Refusal	Amount parents contributed to institution expenses	205	1.8
	Don't Know	In-kind support provided student	3,138	34.9
	Combined	In-kind support provided student	3,235	35.9
Dependents	Refusal	Amount paid for education of all dependents	119	1.4
	Don't Know	Amount paid for education of all dependents	1,411	17.1
	Combined	Amount paid for education of all dependents	1,530	18.5
Employment and Financial Condition	Refusal	Current worth of cash, savings, and checking	2,483	22.4
	Don't Know	Income tax liability for 1991	5,019	46.0
	Combined	Income tax liability for 1991	6,439	59.1
Demographics	Refusal	Year parent was born	367	3.3
	Don't Know	Year spouse was born	59	0.7
	Combined	Year parent was born	406	3.7
Sample Student's Education	Refusal	Ever applied for financial aid	108	1.1
	Don't Know	Ever applied for financial aid	496	5.2
	Combined	Ever applied for financial aid	604	6.3
Attitudes	Refusal	Student planning/attending graduate school	47	1.0
	Don't Know	Student planning/attending graduate school	398	8.3
	Combined	Student planning/attending graduate school	445	9.3

Note: A total of 11,281 parents were interviewed.

[a] Parent could refuse to answer any question, or indicate that they did not know the answer to any question. Items with the highest rates of the combined indeterminate responses are also shown as "combined."

[b] The percent of respondents was calculated only for those parents who reached the item and for whom it was applicable.

5.4.5 Interview Timing

Average time for interview administration, by interview section and by major student sampling stratum[7], is shown in Table 5.12[8]. The cumulative effects of break offs in each successive section introduces differential numbers of cases contributing to different section times (the number of cases is a monotone nonincreasing function over successive sections of the interview). The total interview time shown is the sum of the section times (and probably represents a more realistic estimate of administration time than that obtained only from those completing all sections of the interview)[9].

While overall administration time was approximately 31 minutes, time for the B&B sample members (39.6 minutes) was greater than that for non-B&B graduate/first-professionals (30.8 minutes), which in turn was greater than for non-B&B undergraduates (27.9 minutes). The additional time required for B&B sample members was due, in the main, to additional questions asked of this group; such questions were asked in Sections B, E, F, J, and K, in each of which administration time is greater for the B&B group. Increased administration time for non-B&B Graduate/First-professional students over that for non-B&B undergraduates occurs principally in Sections A, C, and F, reflecting the larger number of institutions attended, more complex aid packages, and greater educational expectation detail for the graduate-level students.

Overall administration time for sample members completing all sections of the student interview, crossclassified by level of offering and control of NPSAS institution from which they were selected, is shown in Table 5.13[10]. Between sector differences are minimal, and do not exceed what would be expected due to differential student strata sampling rates among the sectors considered[11].

This reflects final classification; because of the definitions used plus the nature and timing of sampling, B&B sample members appear in both the undergraduate and graduate/first-professional final analysis files.

These analyses were restricted to sample members maintained in the graduate and undergraduate final analysis files. Defined cases contributed to timing results for a specific section only if: (a) the elapsed time to complete a section was positive, (b) all prior section times (if any) were positive, (c) cumulative timer showed increasing times across all prior sections (if any), and (d) section completion time did not exceed 65 minutes.

Since burden is a widely accepted contributing factor to interview "breakoff", it is likely that those who broke off the interview were taking longer to complete it than those who did not.

These analyses were also restricted to sample members maintained in the graduate and undergraduate final analysis files. Defined cases contributed to overall timing results only if: (a) all interview sections (A-K) were completed, (b) all section completion times were positive (nonzero), (c) cumulative interview time increased over all sections, and (d) completion time was not less than 5 minutes and did not exceed 125 minutes. Exclusion rule differences between Table 5.13 and Table 5.12 account for different total number of cases.

Separate unreported analyses, crossclassifying institutional sector and major student stratum, showed no meaningful administration time differences among sectors, when student stratum was controlled.

Overall administration time within student strata for selected student characteristics are shown in Table 5.14[12]. Because of differential distributions across major student strata, and previously shown timing differences across strata, the relevant comparisons in this table are within student strata. No meaningful gender differences are observed, and while generally few consistent differences emerge, they may be worthy of note.

Within the non-B&B undergraduate group, unclassified students took longer to complete the interview than other groups. This probably reflects two factors: (a) included in this group are individuals who could not be classified due to insufficiency of record abstract data and when abstract data were not available, additional questions were asked of students to try to capture these data during the interview; and (b) also included in the group are "special students", many of whom had considerably broader educational backgrounds than the typical student and for whom capturing these data took additional time.

Within the B&B and non-B&B graduate-level group, administration time was consistently lower for first-professional students than for graduate students. This may reflect more straightforward educational backgrounds (e.g., fewer institutions involved) and/or less complex loan packages among the first-professional students; however, it may also reflect more work experience to report during the NPSAS year among the graduate students. Also, within all student strata groups, administration time for white students was less (usually markedly so) than that for students of other races. This may also reflect differences in educational backgrounds, loan packages, and/or work experiences to report.

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[12] Exclusion rules used for statistics reported in Table 5.14 are identical to those used for Table 5.13.

Table 5.12. -- Average Minutes to Complete Student Interview by Interview Section and Student Stratum

Interview Section	Total		Corrected Student Stratum [a]					
			B&B		Other Undergraduates		Other Graduates/First-Professionals	
	Count	Minutes	Count	Minutes	Count	Minutes	Count	Minutes
Total [b]	NA	30.7	NA	39.3	NA	27.7	NA	30.5
A. Institution Enrollment	52,527	5.7	11,761	5.2	30,546	5.5	10,220	7.0
B. Enrollment & Costs	51,697	4.9	11,603	5.6	30,025	4.7	10,069	4.7
C. Financial Aid	51,281	3.3	11,505	3.7	29,775	3.0	10,001	3.9
D. Additional Support	51,053	2.5	11,444	2.7	29,641	2.6	9,968	2.2
E. Employment	50,854	3.1	11,394	3.6	29,518	3.0	9,942	3.0
F. Educational Expectations	50,713	2.7	11,298	7.4	29,487	1.2	9,928	1.9
G. Citizenship	50,651	1.7	11,282	1.8	29,453	1.7	9,916	1.7
H. Parent Characteristics	50,560	1.6	11,259	1.4	29,399	1.6	9,902	1.6
I. Financial Status	50,463	3.6	11,250	3.3	29,326	3.6	9,887	3.9
J. Demographics	50,428	1.3	11,230	3.6	29,315	0.7	9,883	0.6
K. Locating Information	50,423	0.3	11,227	1.0	29,313	0.1	9,883	0.0

Note: A section was considered complete if (1) the amount of time to completion was a positive (nonzero) value; (2) all previous section times were positive (nonzero) values; and (3) the cumulative time had an increasing value across sections. Section completion times greater than 65 minutes were considered outliers and, therefore, excluded from timing calculations. The number of cases contributing to timing results in each cell represents only those meeting the criteria for a completed section, excluding outliers. Because of increasing cumulative break offs in each successive section, the monotone nonincreasing function of cases over increasing sections is expected.

[a] Reflects final classification; because of the definitions used plus the nature and timing of sampling, B&B sample members appear in both the undergraduate and graduate/first-professional final analysis data files.

[b] Total time is determined as the sum of the section times; because of unequal numbers contributing to section times, the total count is not defined (NA).

Table 5.13. -- Average Minutes to Complete Student Interview by Institutional Sector

Institutional Sector: Control	Institutional Sector: Highest Level of Offering [a]	Count	Average Minutes
Overall	Total	50,379	30.8
Public	Total	32,121	30.7
	Less than two years	967	30.5
	Two to less than four years	5,341	28.6
	Bachelors-granting	1,146	30.1
	Masters-granting	8,795	31.2
	Doctorate-granting	4,592	31.3
	First-professional Degree Granting	11,280	31.1
Private, not-for-profit	Total	13,748	31.5
	Less than two years	437	32.2
	Two to less than four years	479	28.2
	Bachelors-granting	2,354	31.8
	Masters-granting	3,985	32.2
	Doctorate-granting	1,044	32.3
	First-professional Degree Granting	5,499	30.9
Private, for-profit	Total	4,510	29.9
	Less than two years	3,460	29.7
	Two years or more	1,050	30.6

Note: All analyses were restricted to those sample members maintained in the final analysis files **and** for whom: (1) all interview sections (A through K) were completed, (2) the time to complete each section was a positive (nonzero) value, and (3) the cumulative interview times increased across sections; outlier interview times of less than 5 minutes or more than 125 minutes were also excluded from timing calculations.

[a] Some cells were combined to maintain adequate sample sizes.

Table 5.14 Average Minutes to Complete Student Interview by Selected Student Characteristics

Student Characteristics		Total		Corrected Student Stratum [a]					
				B&B		Other Undergraduates		Other Graduates/First-Professionals	
Characteristic	Level	Count	Minutes	Count	Minutes	Count	Minutes	Count	Minutes
Overall	Total	50,379	30.8	11,207	39.4	29,295	27.8	9,877	30.3
Gender [b]	Male	22,218	30.5	4,890	39.2	12,602	27.4	4,826	29.9
	Female	28,057	31.1	6,316	39.5	16,690	28.0	5,051	30.7
Race	White	38,355	30.5	9,291	38.9	21,241	27.1	7,823	29.9
	Black	4,948	31.1	722	40.6	3,611	29.0	615	32.5
	American Indian/Alaskan Native	468	31.5	78	39.9	315	29.2	75	32.5
	Asian/Pacific Islander	2,708	32.9	493	42.2	1,372	30.2	843	31.8
	Other [c]	3,891	32.2	614	42.6	2,756	29.9	521	31.9
Level in Institution [d]	Freshman	13,191	27.9	NA	NA	13,191	27.9	NA	NA
	Sophomore	5,996	27.4	NA	NA	5,996	27.4	NA	NA
	Junior	4,951	27.3	NA	NA	4,951	27.3	NA	NA
	Senior	14,869	36.2	10,686	39.4	4,183	28.1	NA	NA
	Unclassified Undergraduate	974	29.5	NA	NA	974	29.5	NA	NA
	Graduate	7,246	31.4	437	38.5	NA	NA	6,809	30.9
	First-professional	3,152	29.2	84	37.2	NA	NA	3,068	29.0

Note: All analyses were restricted to those sample members maintained in the final analysis files **and** for whom: (1) all interview sections (A through K) were completed, (2) the time to complete each section was a positive (nonzero) value, and (3) the cumulative interview times increased across sections; outlier interview times of less than 5 minutes or more than 125 minutes were also excluded from timing calculations.

[a] Reflects final classification; because of the definitions used plus the nature and timing of sampling, B&B sample members appear in both the undergraduate and graduate/first-professional final analysis data files.

[b] The four respondents refusing to report gender during the telephone interviews, and for whom no other information on gender was available, were not included in the analyses.

[c] The "other" category includes those sample members whose race was indeterminate as well as those who reported a race other than others shown.

[d] Generally, level in institution was based on student's status at the beginning of the school year. If requisite information was missing, however, level in institution was estimated based on input variables for degree program, the student sampling stratum, and financial aid information; the unclassified undergraduate category includes those for whom exact undergraduate classification could not be otherwise determined as well as those reporting "unclassified" or "special student".

5.4.6. Field Period for Student Interviewing

Figure 5.3 displays the cumulative number of completed student interviews on a daily basis. Telephone interviewing began September 1 and ended March 21.

Figure 5.3 Field Period for Student Interviewing

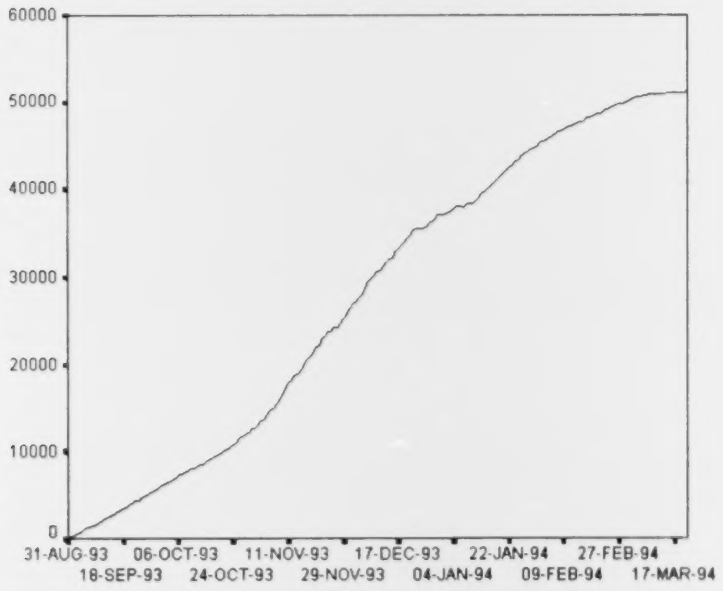


Figure 5.4 displays the number of completed student interviews by hour of the day (based on the time zone of the originating call, that is, central standard time for the Abt Telephone Center and eastern standard time for RTI's). The centers operated from 7:00 am to 10:00 pm. The most productive hours for interviewing were from 5 pm through 7 pm. However, the chart does indicate that the daytime hours were very productive as well. Early morning and late evening counts consists mainly of appointments rather than "cold calls."

Figure 5.4 Completed Cases by Time of Day

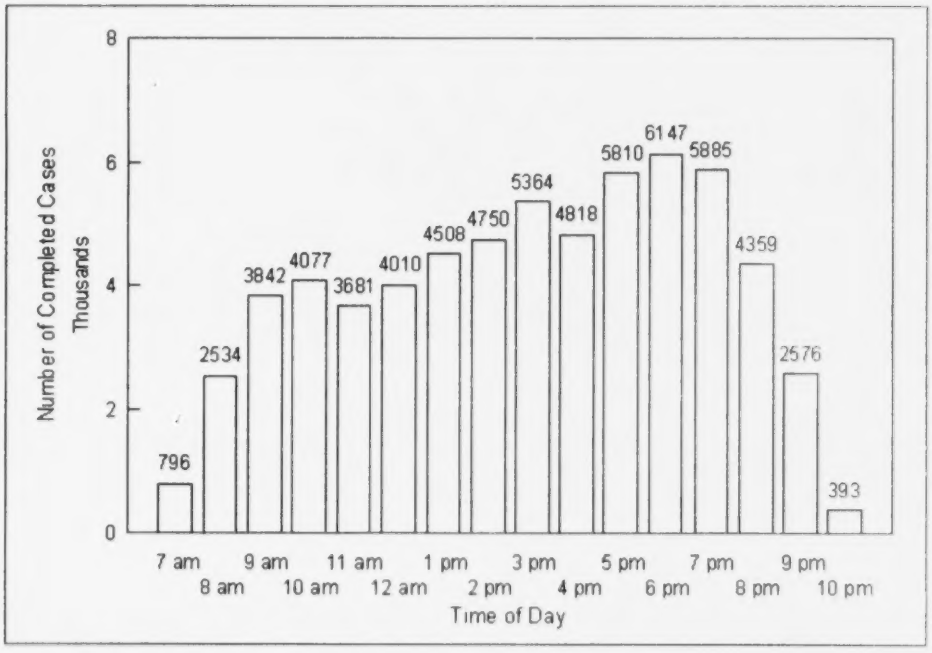
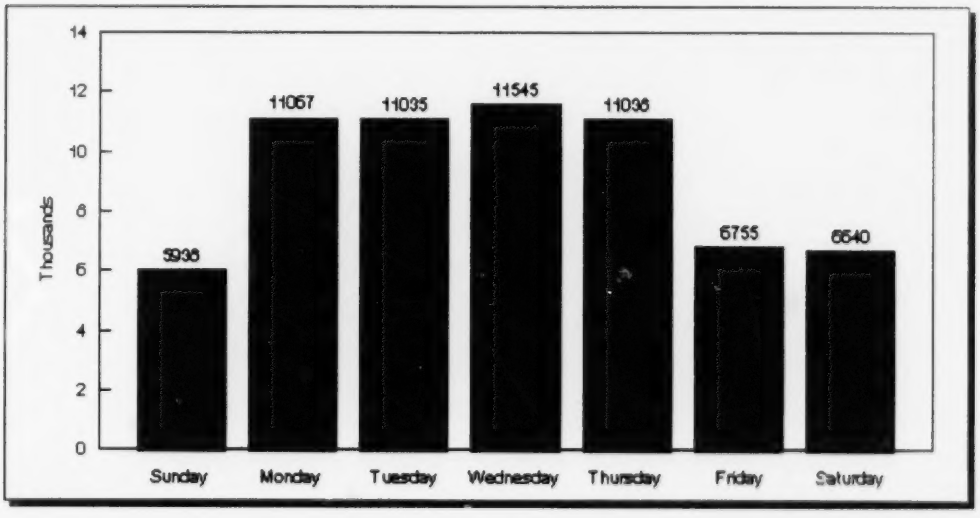


Figure 5.5 shows the number of completed cases by day of the week. Monday through Thursday were the most productive days with nearly twice as many completed cases as Sunday, Friday, and Saturday.

Figure 5.5 Completed Cases by Day of the Week



CHAPTER 6 FILE CREATION AND DATA ANALYSIS

Data from the NPSAS:93 and other NCES data programs are made available through the Data Analysis System (DAS) and the Electronic Code Book (ECB). NPSAS:93 student-level data are derived from institutional records data and student and parent telephone interviews. This chapter describes how the NPSAS:93 files are organized and the processing steps completed between the collection of the raw survey data and the release of analysis files.

6.1 Overview of the 1993 NPSAS Files

Table 1.1 in chapter 1 provides a summary of the data sources used in the creation of the NPSAS:93 files. For analyses, data may be drawn from any of 16 separate data sets for undergraduate students and graduate students (including first-professionals) and parents.

The institutional records data (CADE) and telephone interview (CATI) files contain data either abstracted directly from institutional administrative records or entered during telephone interviews with students and parents. Data from all parent interviews are included in a single data set.

Variables were constructed from either the CADE and/or CATI. For each of the derived variables, the ECB includes an indicator for the source of the information on a student level.

The verbatim files include responses from "Other, specify" items and verbatim response to items concerning student's majors, and the industry and occupation of jobs held by the student. (Major and industry and occupation were coded into standard classification schemes during the telephone interviews using software developed by NCES for this purpose and the codes for these items are in the derived variable files.)

6.2 Editing

Following the completion of data collection, files were created for undergraduate and graduate students based on the record abstraction information, student telephone interviews, and parent telephone interviews. In addition, separate data files were created for the B&B students. For the student telephone interview data, the B&B files contained data from a section of the questionnaire that was administered only to the B&B cohort as well as data from other sections of the questionnaire.

Each of these seven files (CADE and CATI data for undergraduate and graduate students and for the B&B cohort and the parent telephone interview for all students) was edited separately following range and inter-item consistency checks. Range checks are summarized in the variable descriptions contained in the ECB and DAS. Inconsistencies between data elements, either between the instruments or within instruments were resolved in the construction of the derived variables. Protocol for resolving these descrepancies are described in the variable descriptions contain in the ECB and DAS.

6.3 Coding

All coding in the NPSAS:93 telephone survey was completed during the interview. Verbatim responses to telephone interview items concerning student major and the industry and occupation represented by student jobs were coded during the telephone interview using NCES-developed software that presents a code or several codes for the interviewer to confirm with the student/parent. Responses to other types of questions concerning future plans or reasons for declining financial aid were field-coded. Interviewer proficiency at coding respondents' answers was monitored and retraining was conducted as necessary.

6.4 Overall Study Response Rates

The students included in the final NPSAS:93 analysis data base were defined to be the overall study respondents. A more stringent response definition was imposed for the sample selected as the baseline cohort for the baccalaureate and beyond (B&B) longitudinal study. The B&B response rates are considered in the second subsection below.

6.4.1 Base Study Response Rates

Of the 82,016 sample students selected from eligible sample institutions, 79,269 were ultimately determined to be eligible sample students. An eligible sample student was defined to be a study respondent (included in the analysis data base) if any of the following conditions were satisfied:

(1) data were successfully collected for at least Section A of the student CATI interview;

(2) data were successfully collected for at least Section L of the parent CATI interview;

(3) CADE data indicated that the student received federal financial aid other than aid awarded by the Veteran's Administration or the Department of Defense;

(4) the student was identified as a Pell grant recipient, including matches to the Department of Education's 1992-93 award files based on the student's social security number; or

(5) a sufficient amount of CADE data were abstracted for the student, depending on student level (undergraduate, graduate, or first-professional).

Using this definition of the overall study response status, Table 6.1 shows that 66,096 of the 79,269 eligible sample students were classified as respondents for an unweighted response rate of 83.4 percent. This table also presents the base study response rates by various institutional and student characteristics derived from the IPEDS IC file and from the CADE data. The final analysis file variables were not used to construct this table because they were usually defined only for the study respondents.

This table also presents "weighted" and "effective" response rates. The weighted response rates are based on the student sampling weights with adjustments for institutional nonresponse and for student multiplicity (attendance at more than one NPSAS-eligible institution during the NPSAS year). These response rates can be interpreted as the estimated percentages of students attending institutions willing to provide lists for student sampling who would have been classified as respondents, if selected. The overall weighted response rate in Table 6.1 is 79.5 percent. The weighted response rates by institutional and student categories are generally comparable to the unweighted response rates.

By late February 1994, the CATI response rates had not yet achieved the study goals of a 92 percent response rate for the B&B cohort and an 85 percent response rate for the remainder of the sample. To shorten the time needed to meet the response rate goals, a nonresponse follow-up subsample was selected. Hence, Phase 1 data collection was closed out as of the close of business on Sunday, February 27, and a nonresponse follow-up subsample was selected from the remaining nonrespondents as of that point in time. One thousand of approximately 21,000 B&B nonrespondents and 5,000 of approximately 40,500 non-B&B nonrespondents were selected for the Phase 2 nonresponse follow-up subsample. No new interviewing procedures or incentives for participation were introduced for the nonresponse follow-up subsample; the interviewers simply worked the cases in the nonresponse follow-up subsample more intensively during the final weeks of data collection.

The effective response rate for each stratum for which a nonresponse subsample was selected can be represented as

$$R = R_1 + (1 - R_1) R_2 \ , \qquad (26)$$

where R_1 is the Phase 1 response rate and R_2 is the response rate achieved among those units selected for the nonresponse follow-up subsample.

Table 6.1 Overall Study Response Rates, Given Institutional Response for Student Sampling

Type of Student	Eligible Sample Students	Participating Students	Unweighted Response Rate	Weighted Response Rate	Weighted Effective Response Rate
All Students	79,269	66,096	83.4	79.5	85.0
Institutional Level:					
Less-than-2-year	9,759	7,482	76.7	80.0	86.0
2-year	11,080	8,387	75.7	73.2	79.9
Bachelors	5,845	4,891	83.7	80.8	85.6
Masters	19,254	16,493	85.7	83.9	88.2
Doctors	8,576	7,224	84.2	83.2	87.1
First-professional	24,755	21,619	87.3	86.3	90.6
Institutional Control:					
Public	48,627	40,457	83.2	78.4	84.2
Private, not-for-profit	21,828	18,397	84.3	83.2	87.7
Private, for-profit	8,814	7,242	82.2	82.4	87.0
Institutional Sector:					
Public, less-than-2-year	1,878	1,226	65.3	78.9	85.0
Public, 2-year	8,873	6,531	73.6	72.5	79.3
Public, Bachelors	1,757	1,401	79.7	76.7	81.6
Public, Masters	12,879	11,017	85.5	84.0	88.5
Public, Doctors	6,796	5,846	86.0	85.8	88.8
Public, First-professional	16,444	14,436	87.8	86.7	91.1
Private, not-for-profit, 2-year or less	1,870	1,356	72.5	78.5	84.2
Private, not-for-profit, Bachelors	3,814	3,256	85.4	83.5	88.1
Private, not-for-profit, Masters	6,099	5,262	86.3	84.2	88.3
Private, not-for-profit, Doctors or First-professional	10,045	8,523	84.8	83.1	87.7
Private, for-profit, less-than-2-year	6,826	5,540	81.2	81.4	87.1
Private, for-profit, 2-year or more	1,988	1,702	85.6	83.7	87.0
Student Level:					
Less-than-2-year enrollee	9,686	7,411	76.5	79.9	85.9
2-year enrollee	10,897	8,212	75.4	72.9	79.6
Baccalaureate recipient	16,316	14,553	89.2	90.4	94.0
Other undergraduate	27,615	23,203	84.0	83.0	87.6
Graduate student	10,142	8,719	86.0	85.1	89.3
First-professional student	4,613	3,998	86.7	87.2	90.3
Aid and dependency status:[a]					
Aided, dependent	11,700	11,682	99.8	99.8	99.8
Aided, independent	15,877	15,805	99.5	99.5	99.5
Aided, unknown	5,822	5,487	94.2	92.8	95.4
Not aided, 23 or younger	17,573	13,737	78.2	74.2	81.4
Not aided, 24 or older	20,530	15,083	73.5	70.5	76.8
Not aided, age unknown	2,381	1,362	57.2	57.1	67.0
Aid status unknown	5,386	2,940	54.6	55.3	61.0

Table 6.1 Overall Study Response Rates, Given Institutional Response for Student Sampling (continued)

Type of Student	Eligible Sample Students	Participating Students	Unweighted Response Rate	Weighted Response Rate	Weighted Effective Response Rate
Gender:[a]					
Male	32,759	27,783	84.8	79.6	85.1
Female	40,508	34,990	86.4	81.8	87.0
Unknown	6,002	3,323	55.4	57.8	65.4
Local Residence:[a]					
Campus Housing	5,687	5,660	99.5	99.5	99.7
Off campus (not with parents)	17,589	17,441	99.2	98.9	99.3
With Parents	4,660	4,635	99.5	99.5	99.7
Not specified	51,333	38,360	74.7	72.0	78.6
Student Level:[a]					
Freshman (1st year undergrad)	20,712	17,924	86.5	81.0	86.3
Sophomore (2nd year undergrad)	8,648	7,696	89.0	86.6	90.3
Junior (3rd year undergrad)	6,927	6,317	91.2	91.0	93.6
Senior (4th/5th year undergrad)	21,673	19,300	89.1	89.2	92.6
Undergraduate (unknown level)	5,820	1,460	25.1	24.1	32.3
Graduate student	10,769	9,302	86.4	85.4	89.5
First-professional student	4,720	4,097	86.8	87.4	90.4
Race/ethnicity:[a]					
White, non-Hispanic	47,246	41,371	87.6	82.6	87.9
Black, non-Hispanic	6,466	5,673	87.7	82.3	85.9
Hispanic	4,708	4,013	85.2	80.2	85.6
American Indian or Alaskan Native	596	496	83.2	74.7	82.0
Asian or Pacific Islander	3,444	2,827	82.1	79.8	86.5
Other	877	690	78.7	75.3	76.4
Unknown	15,932	11,026	69.2	67.3	74.6

[a]Based on student record abstraction (CADE).

The effective overall weighted response rate for the base study is shown to be 85.0 percent in Table 6.1. The effective response rate exceeds the weighted and unweighted response rates for all types of institutions and all types of students indicating that higher response rates were achieved in the nonresponse follow-up subsample consistently across all types of institutions and all types of students.

Because students were included in the NPSAS:93 analysis file (i.e., considered to be a study respondent) based on availability of sufficient CADE or CATI data, or ED records for receipt of a Pell grant, Table 6.2 summarizes the types of data that are availability for the 66,096 study respondents. Students are classified with respect to having any CADE

abstraction data, having completed at least Section A of the student CATI, or having completed at least Section L of the parent CATI, treating students with matching Pell grant data from ED as having CADE data. Most of the study respondents (79.2 percent) have student CADE and CATI data--including about 16 percent also have parent CATI data. However, 19.6 percent have only CADE abstraction (or matching Pell grant) data.

Table 6.2 Data Sources Available for Study Respondents

Data Source(s)	Number of Students	Percentage of Students
Abstract, Student CATI, and Parent CATI	10,794	16.3
Abstract and Student CATI	41,556	62.9
Abstract and Parent CATI	425	0.6
Student and Parent CATI	38	0.1
Student CATI only	326	0.5
Abstract only	12,957	19.6

6.4.2 B&B Cohort Response Rates

Sample students were assigned to the baseline cohort for the Baccalaureate and Beyond (B&B) longitudinal study if they were awarded their baccalaureate degree at any time between July 1, 1992 and August 31, 1993. The number of eligible sample students identified as belonging to the B&B cohort was 16,316.

Students were defined to be respondents for B&B cohort analyses only if they had completed at least Section A of the student CATI interview because the data collected in subsequent follow-up interviews requires baseline data for comparison. Table 6.3 shows that the total number of eligible B&B sample students who were respondents under this definition was 11,810, or 72.4 percent of the eligible B&B sample members. This table also shows that the weighted and effective response rates for the B&B baseline cohort were 76.1 and 83.4 percent, respectively. The response rates are presented in this table for various institutional and student categories of interest. The weighted response rates can be interpreted as the estimated percentages of students receiving baccalaureate degrees from institutions willing to provide lists for student sampling who would be classified as B&B cohort respondents, if selected.

Table 6.3 B&B Cohort Response Rates, Given Institutional Response for Student Sampling

Type of Student	Eligible Sample Students	Participating Students	Unweighted Response Rate	Weighted Response Rate	Weighted Effective Response Rate
All Students	16,316	11,810	72.4	76.1	83.4
Institutional Level:					
Bachelors or less	1,967	1,372	69.8	76.6	84.8
Masters	5,433	4,055	74.6	78.2	84.1
Doctors	2,539	1,762	69.4	72.4	80.4
First-professional	6,377	4,621	72.5	75.8	83.6
Institutional Control:					
Public	10,410	7,714	74.1	78.5	85.5
Private, not-for-profit	5,723	3,968	69.3	71.6	79.3
Private, for-profit	183	128	69.9	70.7	86.3
Institutional Sector:					
Public, Bachelors or less	408	326	79.9	90.9	93.3
Public, Masters	3,380	2,568	76.0	79.5	85.7
Public, Doctors	2,029	1,454	71.7	75.1	83.5
Public, First-professional	4,593	3,366	73.3	77.2	84.8
Private, not-for-profit, Bachelors or less	1,447	967	66.8	69.0	78.5
Private, not-for-profit, Masters	1,983	1,439	72.6	75.7	81.0
Private, not-for-profit, Doctors or First-professional	2,293	1,562	68.1	70.5	78.5
Private, for-profit	183	128	69.9	70.7	86.3
Aid and dependency status:[a]					
Aided, dependent	3,003	2,277	75.8	78.1	85.4
Aided, independent	2,737	2,053	75.0	77.9	84.9
Aided, unknown	1,463	1,078	73.7	77.4	85.2
Not aided, 23 or younger	4,847	3,510	72.4	75.9	83.2
Not aided, 24 or older	3,013	2,107	69.9	76.2	83.5
Not aided, age unknown	351	226	64.4	71.2	74.0
Aid status unknown	902	559	62.0	65.3	74.9
Gender:[a]					
Male	6,773	4,904	72.4	76.2	85.6
Female	8,627	6,393	74.1	77.6	82.9
Unknown	916	513	56.0	62.6	72.0
Local Residence:[a]					
Campus Housing	1,373	1,049	76.4	77.8	83.1
Off campus (not with parents)	3,694	2,767	74.9	77.5	85.2
With Parents	754	583	77.3	79.8	88.7
Not specified	10,495	7,411	70.6	75.2	82.6
Race/ethnicity:[a]					
White, non-Hispanic	11,417	8,691	76.1	79.1	86.5
Black, non-Hispanic	1,021	669	65.5	72.0	77.5
Hispanic	682	481	70.5	76.6	80.8
American Indian or Alaskan Native	84	59	70.2	70.7	84.7
Asian or Pacific Islander	690	441	63.9	71.1	82.0
Other	177	95	53.7	58.2	60.6
Unknown	2,245	1,374	61.2	66.5	74.5

[a]Based on student record abstraction (CADE).

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6.5 Derived Variables

Approximately 800 variables have been constructed based on data collected in the NPSAS:93. These derived variables are listed in Appendix A. As a general rule, the constructions of derive variables that concern financial aid and other financial descriptors depend first on record abstract data from the CADE system. These data are supplemented in many cases with information collected in the telephone interviews with parents and students. As between parent and student data, precedence was generally given to parent data for variables concerning family income and assets. The rules for construction derived variables are described in the ECB and DAS.

6.6 Imputed Values

Imputations were performed on seven variables that contained missing values. The imputation procedures and a comparison of the pre- and post-imputation values for these variables are presented in Appendix D.

CHAPTER 7 WEIGHTS AND VARIANCE ESTIMATION

Three sets of analysis weights have been prepared for analysis of the NPSAS:93 data. The three sets of weights are for analysis of the data collected for:

(1) the 66,096 base study respondents (see Table 6.1);
(2) the 11,810 B&B baseline cohort respondents (see Table 6.2); and
(3) the 77,624 respondents for student data abstraction (CADE) (see Table 4.2).

Each set of weights contains an estimation weight for computing point estimates of population parameters and estimating population relationships (e.g., regression coefficients). Also, the base study respondents and the B&B baseline cohort respondents have 42 replicate weights for computing sampling variance estimates using the Jackknife replication technique.

This chapter describes how the weight components were computed . Institution-level weight components are discussed in Section 7.1, and student-level weight components are discussed in Section 7.2. How these weight components were utilized to compute each of the three sets of weights listed above is then summarized in Section 7.3.

Sampling error estimates are discussed in the final section of this chapter. Construction of Taylor series strata and replicates for estimating variances using the Taylor series linearization technique is discussed. Construction of the Jackknife replicates and use of the Jackknife replicate weights for variance estimation is discussed. Standard error estimates computed using the Taylor series and Jackknife replication methods are compared, and survey design effects for estimates of population percentages for categorical variables are analyzed.

7.1 Institution-Level Weight Components

Institution-level weighting begins with the sampling weights based on the probabilities of selection for the primary sampling units (PSUs) selected into the area sample and the probabilities of selecting the individual institutions within the survey PSUs (both sample and certainty PSUs). The sampling weights of a few institutions are then adjusted to account for the fact that they were represented by more than one record on the sampling frame. Finally, adjustments are made to reduce the potential for bias that could result from institution nonresponse.

7.1.1 Sampling Weight Components

The sampling weight components are the reciprocals of the probabilities of selection at the first two stages of sample selection. The first weight component (WT1 on the analysis file) is the reciprocal of the probability of selecting the area PSU in which the institution is located, given by **(6)** in Chapter 2. The second weight component (WT2 on the analysis file) is the reciprocal of the conditional probability of selecting the sample institution at the second stage of sampling, given that the area PSU in which it is located was selected at the first

stage of sampling, which is given by **(8)** for institutions selected from the 86 certainty PSUs and **(10)** for those selected from the 90 sample PSUs.

When calling the NPSAS:93 sample institutions to identify on-campus coordinators, RTI staff attempted to determine if there were any branch campuses associated with the sample institutions. If an institution had branch campuses, RTI staff attempted to determine if they were separately listed on the combined institutional sampling frame (IPEDS IC file and OPE_IDS file). If they were not separately listed, staff attempted to obtain a single list of students that represented all the branches.

Five institutions with branches were identified for which only one branch was listed on the sampling frame and for which the institution was not able to provide a composite student list for all the branches. For each of these institutions, one branch was selected at random as the sample branch. Thus, the weight factor (WT3 in the analysis file) associated with this stage of subsampling is the number of branches from which one was selected at random. The affected institutions and their associated weight factors are listed below.

IPEDS ID	WT3
114266	2
219204	7
148177	2
207014	2
122436	2

In addition, there were sample institutions for which the frame contained records for multiple campuses but not for all the campuses. In this case, the preferred sampling approach was to uniquely link each campus that was not listed to the closest campus that was listed. Then, the sample was defined to include the selected campus and any linked campuses. However, for three institutions, the number of campuses that were not listed was moderately large and a decision was made that the process of uniquely linking unlisted campuses to listed campuses would be such a burden for the institution that their participation would be endangered. Hence, for these three institutions, the campus corresponding to the sample record was retained in the sample, and that record was weighted as if the listed institutions were an equal probability subsample from all the campuses. Thus, for these three institutions the subsampling weight component (WT3) is the ratio of the total number of campuses divided by the number listed on the sampling frame, as shown below.

IPEDS ID	WT3
001139	23/3
109536	19/8
109518	19/8

7.1.2 Multiplicity Adjustments

When processing the NPSAS:93 sample of institutions, RTI staff identified 10 instances where the students at an institution were linked to more than one record on the institutional sampling frame. In eight cases, there were pairs of records on the frame that both represented the same institution, either because of frame errors or because institutions had merged. In two cases, the situation was slightly different. In every case, a multiplicity adjustment to the sampling weights was implemented to account for higher probabilities of selection for students with multiple linkages to the institutional sampling frame. The eight instances involving simple pairs of institutional records are discussed below, followed by the situations for the remaining two institutions.

In two of the eight cases in which a pair of sample records accessed a single institution, one sample record was selected from the IPEDS-based frame, and the other record was selected from the supplemental (OPE-IDS) frame. In the other six cases, the two sample records were both selected from the IPEDS-based frame. In every case, it was not clear that the two sample records accessed the same institution until RTI staff began making telephone calls to the schools to identify study coordinators. Other undetected multiplicities probably exist, but there appears to be no practical way to identify them.

Weight adjustments were implemented for the eight institutions identified as linked to two separate frame records. For the purpose of operationally administering the sample, one of the two records was classified as ineligible, and the survey results were tracked under the other institution's identification number. However, for weighting purposes, records could not simply be ignored and treated as if they were an ineligible, duplicate frame listings because the institutions were selected into the sample if either of the frame records was selected.

Therefore, RTI staff calculated the probability of the institution being selected into the sample as the probability that either Record A or Record B was selected, where these are the two records that were found to both link to the same institution. Treating these records as if they were selected from different sampling strata (technically, different zones, or implicit strata, using the Chromy (1987) sequential sampling method), the probability of selecting the institution was computed as

$$P(A \text{ or } B) = P(A) + P(B) - P(A)P(B), \qquad \textbf{(27)}$$

where the probabilities of selection, P(A) and P(B), are given by **(8)** or **(10)** in Chapter 2, depending on whether the institution was located in a certainty or non-certainty PSU. The multiplicity weight factor (WT4 in the analysis file) was then computed for these institutions as the ratio of the probability of selection that resulted from application of **(8)** or **(10)** for the individual sample record divided by the conditional probability of selection computed for the institution as shown above.

For each of these eight institutions, the multiplicity was detected soon enough that only one list of students was obtained for selection of the student sample. Therefore, no adjustment to the student sampling rates was necessary. The conditional probability of selecting a student was the rate actually used with the one student list received from the institution.

In the first of the remaining two institutions, two campuses were selected into the NPSAS:93 sample. The student list received for the first campus contained the students enrolled at either campus. The list received for the second campus contained only the students enrolled at that campus. This situation was not detected until CADE data were being collected. Hence, there was no multiplicity problem for students enrolled at the first campus, but every student enrolled at the second campus had two independent chances of selection, one based on the list provided for the first campus and one based on the identical list provided for second campus.

Therefore, the second campus was treated as having been selected twice. Hence, the institutional probability of selection was computed for this campus **(27)**, where P(A) and P(B) refer to the separate probabilities of selection for the frame records representing the two campuses based on **(10)** in Chapter 2. The multiplicity weight factor (WT4 in the analysis file) was then computed for all students selected from the second campus (including those selected from the list provided for the first campus) as the ratio of the probability of selection that resulted from application of **(10)** for the individual sample record divided by the conditional probability of selection computed for the institution using **(27)**.

Moreover, since RTI received two lists of students for the second campus and selected an independent sample of students from each list, staff made a similar weight adjustment for the student-level probabilities of selection for the second campus, as described in Section 7.2 below.

Two campuses of the second institution were selected into the NPSAS:93 sample. The lists received for the two campuses were not identical; however, each list contained students enrolled at the campuses of the institution. Four of these six campuses (including the two selected campuses) were listed as separate institutions on the composite (IPEDS/OPE-IDS) sampling frame. However, the two sample campuses/institutions were both certainty selections. Therefore, multiplicity adjustments were necessary only at the student level.

7.1.3 Nonresponse Adjustment

RTI used standard sample-based weighting class weight adjustment procedures to compensate for institution nonresponse to the request for student lists for sample selection (Kalton and Maligulig, 1981). Institution-level response rates by institutional level, control, and size were examined to determine appropriate weighting classes. Some of the results are shown in Table 2.7. Table 7.1 presents the institution-level response rates for the weighting classes adopted to adjust for institutional nonresponse.

The weight adjustment factors (WT5 in the analysis file) shown in Table 7.1 vary from 1.02 for both public, less-than-2-year institutions and private, not-for-profit, Masters-level institutions to 1.40 for private, not-for-profit, doctoral-granting institutions. These weight adjustments are the reciprocals of the weighted institution-level response rates shown in Table 7.1.

After obtaining lists for student sampling, RTI staff were unable to abstract student data from the records of about two percent of the sample institutions (see Table 4.1). The students sampled from these institutions were still eligible for CATI data collection, so this level of institutional nonresponse does not affect the student weights computed for the base study respondents. However, it does affect the set of weights computed for analysis of data from the CADE abstraction. Therefore, another weight adjustment factor was computed to compensate for nonresponse of institutions to the CADE data collection, given response to student sampling. Response rates by the weight adjustment classes discussed above for nonresponse to the request for student sampling lists were examined. Because only about two percent of these institutions were CADE nonrespondents, similar weighting classes with little difference in response rates were collapsed. The weighting classes for institution nonresponse to CADE and the weight adjustment factors (WT6 in the analysis file) are presented in Table 7.2.

7.2 Student-level Weight Components

Student-level weighting begins with the sampling weights based on the sampling rates used to select stratified, systematic samples of students from the lists provided by the sample institutions. The sampling weights were then adjusted to account for the fact that some sample students attended more than one eligible institution during the NPSAS year, and, hence, had multiple linkages to the institutional sampling frame. A generalized raking procedure was then used to adjust the sampling weights of all the eligible students so that they sum to population totals based on ED records. In particular, control totals were established for total annual enrollment, number of Pell grant recipients, and total dollars of Pell grants awarded by post-strata. Logistic models for propensity to respond were then established and used to compensate for the potential bias due to student-level nonresponse. The logistic models for nonresponse were constrained so that most poststratification totals based on the raking models were preserved. The resulting weights included some values that were such outliers that they would have resulted in considerable variance inflation. Therefore, outlier weights were truncated and the raking models were re-run to restore the poststratification totals. Each of these weight components is discussed in the subsections that follow.

7.2.1 Sampling Weight Components

The sampling rates used for the stratified, systematic samples of students were preserved in an institution-level data base by student sampling stratum. The reciprocals of these sampling rates were the initial student weight components (WT7 in the analysis file).

. All of the students listed on the sampling frame provided by Cornell-Statutory University and many of the students on the frame provided by Pontifical Catholic University were found on two separate lists provided by these sample institutions (see Section 7.1.2). Letting, P(A) and P(B) represent the systematic sampling rates used with the two lists on which a student's name appeared, the sampling rate for each student that appeared on two lists was re-computed using **(27)**, and this rate was used as the basis for computing the initial student weight component.

The initial sample was subsampled before being fielded when the sample selected was 100 or more students greater than expected based on the frame (IPEDS) data. The reciprocals of these subsampling rates are the second student-level weight component (WT8 in the analysis file). In a few cases, this weight factor was also used to compensate for the fact that all the student lists were not received (e.g., RTI did not receive lists of students enrolled in the summer session). For most students, the subsampling adjustment factor was unity (1.00).

Table 7.1. Institution-level Weighting-Class Adjustment Factors

Weighting Class	Number of Respondents[a]	Response Rate		Weight Factor (WT5)
		Unweighted	Weighted	
Public, less-than-2-year	43	86.0	98.3	1.02
Public, 2-year, small[b]	100	95.2	97.5	1.03
Public, 2-year, large	95	90.5	91.0	1.10
Public, Bachelors	42	91.3	90.5	1.10
Public, Masters	141	95.3	95.4	1.05
Public, Doctors	51	92.7	94.2	1.06
Public, First-Professional	104	90.4	91.7	1.09
Private, not-for-profit, 2-year or less	36	83.7	89.2	1.12
Private, not-for-profit, Bachelors	71	86.6	89.8	1.11
Private, not-for-profit, Masters	126	94.7	98.5	1.02
Private, not-for-profit, Doctors or First-professional	148	82.7	71.5	1.40
Private, for-profit, less-than-2-year	96	73.8	78.7	1.27
Private, for-profit, 2-year or more	45	86.5	86.3	1.16
Total	1,098	88.3	88.2	--

[a]Provided a student list for sample selection.
[b]Less than 12,905 unduplicated annual enrollment.

Table 7.2 Weight Adjustment Factors for CADE Nonresponse, Given Response for Student Sampling

Weighting Class	Number of Respondents[a]	Response Rate		Weight Factor (WT6)
		Unweighted	Weighted	
Public, less-than-2-year	42	97.7	99.4	1.01
Public, 2-year	195	100.0	100.0	1.00
Public, 4-year	336	99.4	98.9	1.01
Private, not-for-profit, 2-year or less	36	100.0	100.0	1.00
Private, not-for-profit, 4-year	338	97.8	96.9	1.02
Private, for-profit, less-than-2-year	88	91.7	93.3	1.07
Private, for-profit, 2-year or more	44	97.8	95.7	1.05
Total	1,079	98.3	96.0	--

[a]CADE data obtained for at least one student.

7.2.2 Multiplicity Adjustments

Students who attended more than one NPSAS-eligible institution during the NPSAS year (1992-93) would have been listed as a student eligible for sample selection if either of these institutions had been selected in to the sample. Therefore, these students have a higher probability of being selected than comparable students who attended only one NPSAS-eligible institution. The number of NPSAS-eligible institutions that a student attended during the NPSAS year is referred to as the student's multiplicity for sample selection. The simplest adjustment for multiplicity that results in unbiased estimates of population parameters is to divide the student sampling weight by the multiplicity. Therefore, the third student-level weight component (WT9 in the analysis file) is the reciprocal of the student's multiplicity. The multiplicity is was determined from the student's response in the CATI interview and was presumed to be unity (1.00) whenever it was unknown.

7.2:3 Generalized Raking Adjustments

The sampling weights for all eligible NPSAS sample members were adjusted to control totals to ensure population coverage using a generalized raking procedure by fitting an exponential regression model (Folsom, 1991). This adjustment partially compensates for differences between the NPSAS year for the survey population and that for the true target population.

Control totals were established for:

- numbers of Pell grant recipients in the 1992-93 award year by type of institution;
- total dollar amounts of Pell grants in the 1992-93 award year by type of institution; and
- total unduplicated student enrollment in the 1992-93 academic year by type of student and type of institution.

The Pell grant control totals were provided by the Department of Education and are presented in Table 7.3. The unduplicated annual enrollment totals were estimated from fall enrollment totals obtained from the 1992 Fall Enrollment Survey. Ratio estimates of total unduplicated enrollment were computed by multiplying the fall enrollment totals from the Fall Enrollment Survey by the survey estimate of the ratio of total enrollment to fall enrollment for each poststratum shown in Table 7.4. Both the 1992 fall enrollment totals and the computed ratio estimates of total enrollment, used as the control totals, are presented in Table 7.4.

The generalized raking model adjusted the survey weights for all eligible sample students to simultaneously achieve the control totals for Pell grants and for total unduplicated enrollment. The mathematical formulation of the model is presented in Appendix E. The model was run for two sets of study-eligible students: (1) for all 79,269 eligible students in the 1,098 sample institutions that provided a list for student sampling (i.e., all study-eligible sample students) and (2) for the 78,289 eligible sample students in the 1,079 institutions that provided CADE data for at least one sample student. The former weight adjustment factor (WT10S in the analysis file) was used for computing the base study weights. The latter factor (WT10C in the analysis file) was used for computing the analysis weights for the CADE data base. These generalized raking weight adjustment factors can be summarized as shown below.

Weight Set	Minimum	Maximum	Mean	Median
Base study weights	0.16	1.84	1.13	1.12
CADE weights	0.16	1.92	1.13	1.16

Table 7.3 Pell Grant Control Totals

Type of Institution	Dollars Awarded	Number of Recipients
Public, less-than-2-year	49,280,054	38,589
Public, 2-year	1,651,779,407	1,257,906
Public, Bachelors	274,560,889	166,894
Public, Masters or higher	1,858,471,815	1,125,809
Private, not-for-profit, 2-year or less	156,600,837	96,248
Private, not-for-profit, Bachelors	539,987,292	327,984
Private, not-for-profit, Masters or higher	510,204,577	292,309
Private, for-profit, less-than-2-year	770,278,648	470,062
Private, for-profit, 2-year or more	364,738,846	226,244
Total	6,175,902,364	4,002,045

Table 7.4 Student Enrollment Control Totals

	1992 Fall Enrollment	Ratio Estimate of Total Annual Enrollment
Student Level		
Undergraduate	14,087,748	18,478,313
Graduate	1,765,332	2,355,672
First-Professional	303,916	328,197
Type of Institution		
Public, less-than-2-year	191,934	286,625
Public, 2-year	5,759,447	8,181,187
Public, Bachelors	287,666	375,543
Public, Masters or higher	5,666,356	6,865,495
Private, not-for-profit, 2-year or less	209,184	302,406
Private, not-for-profit, Bachelors	635,886	758,929
Private, not-for-profit, Masters or higher	2,493,519	2,930,710
Private, for-profit, less-than-2-year	502,529	833,632
Private, for-profit, 2-year or more	410,475	576,515
Total	16,156,996	21,146,783

7.2.4 Adjustments for Student-level Nonresponse

By now, the CADE weights had already been adjusted for institutional nonresponse for CADE data abstraction. This weight adjustment was not applicable for the base study and B&B weights, as discussed in Section 7.1.3, because CADE nonrespondents were still eligible for CATI interviews. Hence, for the CADE weights only, the adjustment for student-level nonresponse was to compensate only for the approximately one percent of students from whom no CADE data were abstracted, among those institutions for which CADE data were obtained for at least one sample student (see Table 4.2). Therefore, simple weighting-class ratio adjustments were implemented for the CADE nonresponse adjustments. The CADE weight adjustment factors for student-level nonresponse (WT11C in the analysis file) were

1.005 for undergraduates, 1.007 for graduate students, and 1.005 for first-professional students.

All students who had been identified in CADE as having received federal financial aid (other than from the Veterans Administration or the Department of Defense) were defined to be base study respondents. Also, all students identified as having received a Pell grant based on matching to Department of Education administrative records, or based on the CADE and CATI data if no social security number was available, were defined to be base study respondents. Therefore, because these 28,721 sample students were study respondents by definition, they were excluded from the nonresponse weight adjustment, and their weight adjustment factor for nonresponse was set to unity (1.00) for the base study weights. Logistic models for the propensity to respond were used to compensate for the potential bias due to nonresponse among the remaining eligible sample students (Folsom, 1992). Logistic models were fit for: (1) the 50,548 eligible sample students whose nonresponse adjustment factor was not set to unity as described above for the base study weights (WT11S in the analysis file) and (2) the 16,316 eligible sample students who were identified as having received a baccalaureate degree at any time between June 1, 1992 and August 31, 1993 for the B&B baseline cohort weights (WT11B in the analysis file).

The data base of 50,548 eligible sample students for the base study weights was too large to fit a single logistic model for nonresponse. Therefore, the data file was divided into three subsets based on institutional level and control: (1) 15,659 students attending a private, for-profit institution or attending a public or private non-profit institution for which the highest level of offering was baccalaureate or less; (2) 24,818 students attending a public institution for which the highest level of offering was masters or higher; and (3) 10,071 students attending a private institution for which the highest level of offering was masters or higher. Separate logistic models for propensity to respond were run for each of these three sets of students. In addition, a fourth logistic model for propensity to respond was run for the 16,316 eligible sample students in the B&B baseline cohort. The mathematical formulation of the logistic models is presented in Appendix F.

The variables that could potentially serve as predictor, or independent, variables in the logistic models had to satisfy two characteristics. First, they must have non-missing data for most of the eligible nonrespondents. Thus, institutional variables from the IPEDS data base and CADE variables with low levels of missing data were the primary variables available for the nonresponse models. Second, of course, the variables retained in the final models were those found to be predictive of response status.

Student level (undergraduate, graduate, or first-professional) and the nine categories of institutional level and control used for the generalized raking were retained in each model for propensity to respond so that the generalized raking totals for unduplicated enrollment in Table 7.4 would be preserved. However, Pell grant status and dollar amount were not used in the models because all Pell recipients were excluded from the models for the base study weights, as discussed above (except for 453 imputed Pell recipients, only 74 of which were

respondents). Hence, the Pell grant control totals shown in Table 7.3 were not completely preserved by the logistic models.

Potential independent variables based on CADE data that were considered but dropped because of high levels of missing data among the study nonrespondents were:

(1) place of residence (on campus, off campus without parents, with parents, unspecified);

(2) dependency status (dependent, independent, unknown);

(3) student income; and

(4) parent income.

The predictors of propensity to respond that were retained in the final models are presented in Table 7.5 for the three models fit for the base study weights and for the model fit for the B&B weights. Each of the retained variables was statistically significant in the final model at the 15 percent level of significance. OBE Region and gender were considered as potential explanatory variables but were not retained in any of the final models because they were not significant at the 15 percent level.

The logistic models for nonresponse were first run with no constraint on the size of the weight adjustment factors. The weight adjustment factor exceeded three (3.00) for 425 of the 79,269 eligible sample students for the base study weights, and the maximum weight adjustment factor was 5.06. All models were then constrained using the technique developed by Deville and Särndal (1992) so that no weight adjustment factor exceeded three (3.00). The weight adjustment factors resulting from the final constrained logistic models for nonresponse can be summarized as shown below.

Weight Set	Mean	Median	Maximum
Base study weights	1.20	1.06	2.93
B&B weights	1.32	1.28	2.62

Because the logistic model adjustments for nonresponse will be most effective if the models provide a good fit to the observed pattern of survey response, goodness-of-fit for the four logistic models were investigated. In most logistic modeling applications, the goodness of fit is usually measured by the "-2 log likelihood" statistic. However, for surveys with large sample sizes, like the NPSAS, the power (the probability of rejecting the null hypothesis) is too high to yield a meaningful test. Therefore, as an alternative, RTI chose to assess the models with an approach that compares the response propensities predicted from the models with the actual response status of the students.

Table 7.5 Predictor Variables in Logistic Nonresponse Models

Model Independent Variables	No. of Levels	Bachelors or less Institutions	Masters or Higher Public Inst.	Masters or Higher Private Inst.	B&B Model
Survey organization (RTI/Abt)	2		✓		✓
Number of unique CADE phone nos. (0,1,2+)	3		✓	✓	✓
Baccalaureate receipt status (Y/N)	2	✓	✓	✓	
Applied for aid (Y,N,DK)	3	✓	✓	✓	✓
Attendance status (full, half, less than half, DK)	4	✓			✓
GPA quartiles (1st, 2nd, 3rd, 4th, DK)	5	✓	✓	✓	✓
Age categories (18-23, 24-29, 30+, DK)	4	✓			✓
Race/ethnicity (white, black, hispanic, asian, other, DK)	5	✓	✓	✓	✓
Stafford loan (Y/N)	2		✓		✓
Stafford loan amount (continuous)	N/A		✓		✓
Institution Level and Control	9	✓			
Student level (undergrad, grad, first-professional)	3	✓	✓	✓	
Collapsed Sector	5				✓
Pell Grant (Y/N)	2				✓
Pell Grant amount (continuous)	N/A				✓
Pell Grant x Collapsed Sector	10				✓

To begin this approach, RTI staff computed the estimated response propensities based on the four models for all respondents and nonrespondents. Then, the estimated response propensities were ranked and placed into 25 percentile groups. For these 25 groups, RTI compared the mean response propensity with the actual mean response rate. Figure 7.1 presents the mean response propensities plotted against the mean response rates. The plots show strong associations which indicate that all four models have strong associations between the predicted and actual response rates.

To provide a quantitative measure, RTI staff also computed the coefficient of correlation, ρ, for the 25 pairs of predicted and actual response rates. The correlation coefficients were:

Base Study Model 1 (Bachelors or less):	0.95
Base Study Model 2 (Public, Masters or Higher):	0.98
Base Study Model 3 (Private, Masters or Higher):	0.97
B&B Cohort Model:	0.98

All four correlation coefficients indicate strong association and are significant at less than the 0.1 percent level of significance.

7.2.5 Weight Truncation

When many weight factors are involved in computation of the final analysis weights for a survey, as was the case for NPSAS:93, the variability in the final weights sometimes becomes so great that sampling variances are inflated, and mean square errors can be reduced by truncating some of the largest weights and re-allocating (smoothing) the truncated weight to preserve weight totals (estimates of population totals). Therefore, after the NPSAS:93 analysis weights had been computed as the product of the weight factors discussed in the previous sections, the survey design effects or variance inflation factors due solely to variability in the final analysis weights were computed. Because students from different institutional sectors had been sampled at quite different rates (see Table 3.2), RTI computed the unequal weighting design effects within institutional sectors, as follows:

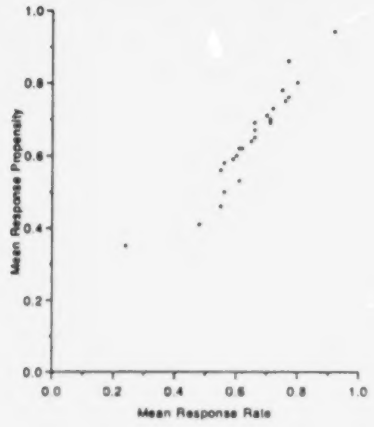
$$d_w = n \Sigma w^2 / (\Sigma w)^2 \quad , \qquad (28)$$

where each summation, Σ, is over the "n" responding students in a particular institutional sector.

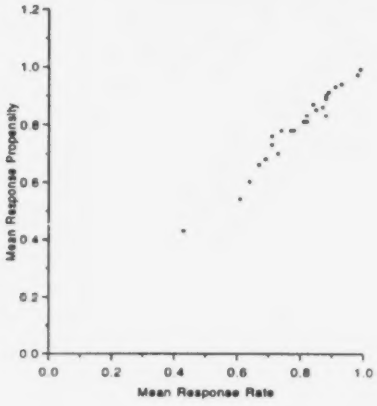
The unequal weighting design effect was less than three for the base study weights for all sectors except the public, less-than-2-year institutions, for which the unequal weighting design effect was 14.30. Therefore, a truncation and smoothing adjustment was implemented for the base study and CADE weights. The unequal weighting design effect was less than three for all sectors for the B&B analysis weights, except for the private, for-profit

Figure 7.1 -- Plots of Mean Response Propensities Against Mean Response Rates

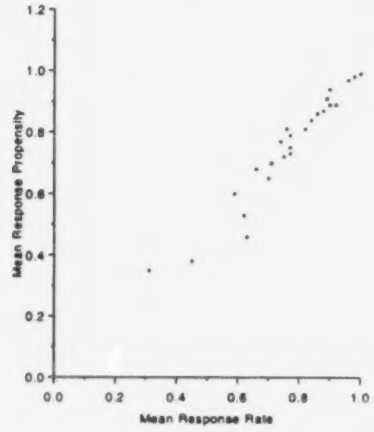
Base Study Model 1
(Bachelors or less Institutions)



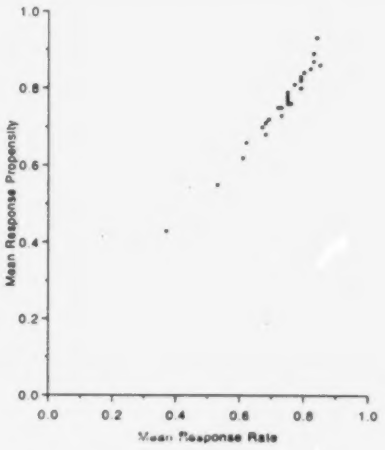
Base Study Model 2
(Public Institutions, Masters or Higher)



Base Study Model 3
(Private Institutions, Masters or Higher)



B & B Cohort Model



institutions, for which it was 3.87. Because this analysis domain was relatively small, truncation and smoothing was not necessary for the B&B weights.

Examination of the upper end of the distribution of the base study weights revealed that 22 sample members had weights between 3,258 and 8,653, while the next largest weight was 2,704, and 78 sample members had weights between 2500 and 2704. Twenty of the 22 largest weights were in Stratum 20, the public, less-than-2-year institutions; the other two were in Stratum 16.

The 20 largest weights in Stratum 20 were all for students from an institution with a measure of size that was too small by about a order of magnitude. The truncation weight factor (WT12S for the base study weights and WT12C for the CADE weights in the analysis file) ratio-adjusted these 20 largest weights down to 2,000. The next largest weight for students in this stratum was 1,709. Similarly, the two largest weights in Stratum 16 were ratio-adjusted down to 3,000. The next largest weight in this stratum was 2,645. All other weights were unaffected by the truncation weight factor.

7.2.6 Final Generalized Raking

The truncated analysis weights were smoothed to sum to the proper population totals by repeating the generalized raking adjustment, discussed in Section 7.2.3, to restore the population totals shown in Tables 7.3 and 7.4. These final raking adjustment factors (WT13S for the base study weights and WT13C for the CADE weights in the analysis file) ranged from 0.96 to 1.07 for the base study weights, and most adjustment factors were very close to unity. The truncation and smoothing adjustments reduced the unequal weighting design effect for students in Stratum 20 (public, less-than-2-year institutions) from 14.29 to 4.65.

7.3 Final Analysis Weights

The three sets of NPSAS:93 analysis weights, those for:

(1) the 66,096 base study respondents;

(2) the 11,810 B&B baseline cohort respondents; and

(3) the 77,624 respondents for student data abstraction (CADE),

were computed as the products of the weight factors described in the previous sections. Those weight factors and the resulting final analysis weights are summarized in Figure 7.2.

The NCES Data Analysis System (DAS) requires all analysis weights to be integers. Therefore, the final adjustment for each analysis weight was to round the weights to integral values. Twenty-three of the base study weights were less than one, eleven were less than one-half. All 23 weights were for students selected with certainty from a public, less-than-2-year certainty institution in a near-certainty area PSU. The institutional poststratification

Figure 7.2 Overview of NPSAS:93 Weight Components

A. Area- and institution-level weight components

1. Area sampling weight (WT1)
2. Institution sampling weight (WT2)
3. Adjustment for subsampling (WT3)
4. Adjustment for multiplicity (WT4)
5. Adjustment for nonresponse of institutions for student sampling (WT5)
6. Adjustment for institution nonresponse in CADE (WT6)

B. Student-level weight components

1. Student sampling weight (WT7)
2. Adjustment for subsampling (WT8)
3. Adjustment for multiplicity (WT9)
4. Generalized raking adjustment

   a. for all eligibles in the 1,098 responding institutions (WT10S)
   b. for the B&B respondents (WT10B = WT10S)
   c. for all eligibles in the 1,078 CADE-responding institutions (WT10C)

5. Adjustment for student-level nonresponse

   a. logistic models for the base study respondents (WT11S)
   b. logistic model for the B&B respondents (WT11B)
   c. weighting classes for the CADE respondents (WT11C)

6. Weight truncation factor

   a. base study respondents (WT12S)
   b. CADE respondents (WT12C)

7. Final generalized raking adjustment (weight smoothing)

   a. base study respondents (WT13S)
   b. CADE respondents (WT13C)

C. Final base study weights

WT1 * WT2 * WT3 * WT4 * WT5 * WT7 * WT8 * WT9 * WT10S * WT11S * WT12S * WT13S, for the eligible study respondents.

D. Final B&B cohort weights

WT1 * WT2 * WT3 * WT4 * WT5 * WT7 * WT8 * WT9 * WT10B * WT11B, for the eligible CATI respondents who are B&B sample members.

E. Final CADE weights

WT1 * WT2 * WT3 * WT4 * WT5 * WT6 * WT7 * WT8 * WT9 * WT10C * WT11C * WT12C * WT13C, for the eligible CADE respondents.

adjustment (see Table 7.1) resulted in weights less than one for these students. All weights less than one were rounded up to one.

7.4 Variance Estimation

Area PSUs and institutions were selected at the first two stages of sampling using sequential sampling from an ordered frame to facilitate formation of analysis replicates and strata for estimation of sampling variances using both the Taylor series linearization method and the Jackknife repeated replication method (see Section 2.3). The first two subsections below present methodology for estimating sampling variances using the Taylor series method and the Jackknife replication method, respectively. In the final subsection, estimates of standard errors computed using these two methods are compared, and survey design effects are examined.

7.4.1 Taylor Series Linearization

Taylor series variance estimates for nonlinear survey statistics are based on representation of the nonlinear statistic by its first-order Taylor series expansion and computation of its variance as if the sampling design were a nested, multistage design with a stratified sample of PSUs selected with replacement at the first stage (Woodruff, 1971). Hence, given the linearization of any nonlinear survey statistic, the essential ingredients for computation of Taylor series variance estimates are the analysis strata and analysis PSUs. Taylor series analysis strata and analysis PSUs were defined separately for the undergraduate sample and the graduate/first-professional sample because they are separate analysis domains for virtually all analyses of NPSAS data and because they comprise separate analysis files in the NCES Data Analysis System (DAS). To ensure stable estimates of sampling variances, each analysis PSU (within analysis stratum) was required to contain at least four respondents for the base study weights and at least five respondents for the B&B weights.

In order that the Taylor series analysis strata and PSUs would reflect the design strata and PSUs to the extent feasible, Taylor series strata and replicates were defined separately within each of the following three subsets of the NPSAS:93 sample:

(1) non-certainty area PSUs,

(2) non-certainty institutions within certainty PSUs, and

(3) certainty institutions within certainty PSUs.

Construction of the analysis strata and PSUs is discussed briefly for each of these three segments of the NPSAS:93 sample.

Area sampling was the first stage of probability sampling for the non-certainty area

PSUs. Area sample PSUs or sets of PSUs were defined to be the analysis PSUs for this portion of the sample. OBE Regions or combinations of Regions were defined to be the analysis strata because they defined implicit strata in which area sample PSUs were selected.

Institution sampling was the first stage of probability sampling for the non-certainty institutions within certainty PSUs. Institutions or sets of institutions were defined to be the analysis PSUs for this portion of the sample. Analysis strata were generally defined to be pairs of institutions, with the pairing based on the frame ordering. When defining analysis strata and PSUs, RTI staff attempted to not cross state boundaries, and never crossed institutional sampling strata.

Student sampling was the first stage of probability sampling for the certainty institutions within certainty PSUs. Institutions were generally defined to be the analysis strata for this portion of the sample and half the students in each institution were randomly assigned to each of two analysis PSUs. When institutions had too few students to allow this construction, two or more institutions within an institutional stratum were treated as a single analysis PSU.

Given the Taylor series analysis strata and analysis PSUs, variance estimates are computed using the NCES DAS as if the sampling design were a nested multistage design in which the analysis PSUs were selected with replacement within the analysis strata.

7.4.2 Jackknife Replication

There are basically two types of replication techniques used for variance estimation for stratified multistage sampling designs like the NPSAS:93 design. They are balanced repeated replication (BRR) and Jackknife replications. The Jackknife procedure has generally been shown to produce variance estimators that are at least as accurate as, if not more accurate than, their BRR competitors (Kovar et al., 1988). Moreover, the Jackknife variance estimators tend to be less erratic when computing variances for small analysis domains because each Jackknife replicate contains all the sample members except those in a single analysis PSU, whereas each BRR replicate contains only half the analysis PSUs in the sample. Therefore, Jackknife replicates were defined for estimation of NPSAS:93 sampling variances, as they had been for NPSAS:90.

To facilitate the Jackknife replication method, the NPSAS:93 design was modeled as if two analysis PSUs were selected within each of 42 analysis strata. Thirty to sixty replicates are usually recommended (Rust, 1986). Because the replication method results in the same number of replicates as analysis strata, 42 analysis strata should be sufficient to yield accurate, but cost-effective, replicate variance estimates. A set of full sample estimation weights and a set of weights for each replicate sample are needed to facilitate the Jackknife replication method of variance estimation.

The process of defining analysis strata and analysis PSUs to use as the basis for

defining Jackknife replicates was essentially the same as described above for defining analysis strata and analysis PSUs for Taylor series variance estimation. One difference was that three sets of Taylor series analysis strata and PSUs were needed to achieve the required minimum number of respondents per analysis PSU within analysis stratum: one set for undergraduate and graduate base study respondents; another for undergraduate and graduate CADE respondents; and a third for B&B baseline cohort respondents. Only a single set of analysis PSUs and analysis strata was needed to construct the Jackknife replicates for all samples. Another difference was that each Taylor series analysis stratum could contain two or more analysis PSUs, but each Jackknife analysis stratum was required to contain exactly two analysis PSUs.

At the conclusion of the process of forming the Jackknife analysis strata and analysis PSUs, each sample student belonged to one of two analysis PSUs within one of 42 analysis strata. Each Jackknife replicate was formed by assigning zero weights to the members of one randomly selected analysis PSU within a single analysis stratum and ratio-adjusting the weights of the members of the stratum's other analysis PSU to preserve the analysis stratum weight total (essentially doubling those weights). All other sample members were retained in the replicate with their unaltered estimation weight. Therefore, the number of sets of replicate weights for Jackknife variance estimation is identical to the number of Jackknife analysis strata, namely 42.

All weight adjustments, beginning with the first generalized raking adjustment, were then implemented independently for each set of replicate weights. Therefore, the Jackknife replication variance estimates include the variance components due to the nonresponse weight adjustments, which are ignored in the Taylor series variance estimates. Moreover, since the final step of the weight adjustment process was generalized raking to the population totals in Tables 7.3 and 7.4, whenever a function of these totals is estimated from the survey data, the Jackknife estimate of the sampling variance will be essentially zero because the estimates produced by the 42 sets of Jackknife replicate weights will be essentially identical. This is consistent with treatment of the raking totals as population totals that are known without error. Conversely, the Taylor series variance estimates do not treat the raking totals as if they were known without error.

7.4.3 Estimates of Sampling Error

Jackknife and Taylor series estimates of sampling variances are compared in Table 7.6 for estimates of the NPSAS:93 population distributions by institutional sector, by race/ethnicity, and by income/dependency for the undergraduate, graduate, and graduate/first-professional populations. Because the Jackknife variance estimates treat the population raking totals as known without error and the Taylor series variance estimates do not, the Taylor series variance estimates are considerably larger for the estimated percentages of the population belonging to the various institutional sectors. Because the other two analysis variables are not direct functions of the raking variables, the Jackknife and Taylor series variances are comparable for these estimated distributions. However, the residual effect of

this fundamental difference in the variance estimators remains, resulting in Jackknife variance estimates that are usually less than the corresponding Taylor series variance. They are not always less because the Jackknife variance estimates account for variance components due to nonresponse weight adjustments that are ignored by the Taylor series variance estimates. Therefore, the Taylor series variance estimates, which are computationally more efficient, can generally be used for conservative statistical inferences.[1]

One aspect of the efficiency of the NPSAS:93 sampling design was addressed by calculating the survey design effects shown in Table 7.7 using Taylor series estimates of sampling variances. The survey design effect for a statistic is the ratio of the sampling variance of that statistic under the actual sampling design divided by the variance that would have been achieved with a simple random sample of the same number of ultimate population units. It can generally be factored into components associated with the effects of: (1) stratification; (2) multistage sampling; (3) unequal probabilities of selection; and (4) weight adjustments for nonresponse. Stratification tends to decrease the design effect(and increase precision), whereas multistage sampling, unequal probabilities of selection, and weight adjustments for nonresponse usually increase the design effect (and decrease precision). Of course, unequal probabilities of selection increase precision for estimates regarding the characteristics of population subgroups that are sampled at higher rates, but decrease precision for estimates of the characteristics of subgroups that cross strata sampled at different rates.

Survey design effects were calculated for population distributions defined based on the following categorical variables:

(1) Institutional sector
(2) Race/ethnicity
(3) Income/dependency

(4) Type of aid package received
(5) Attendance status
(6) Gender of student

(7) Major program of instruction
(8) Receipt of any aid
(9) Receipt of any grant aid
(10) Receipt of any loan aid
(11) Receipt of any work-study aid

(12) Receipt of any federal aid
(13) Receipt of any Title IV aid
(14) Receipt of any state aid

(15) Receipt of any institution aid
(16) Receipt of any employer aid.

Estimates with denominator sample sizes less than 20 or for which the estimated percentage was less than one or greater than 99 were discarded because they were likely to be unstable. The quartiles of the distributions of the design effects are presented in Table 7.7 by:

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[1]Differences that are significantly different based on the Taylor series variance estimates will usually be significant based on the Jackknife variance estimates, also.

(1) Size of the percentage estimate,

(2) Denominator sample size,

(3) Institutional sector,
(4) Race/ethnicity, and
(5) Income/dependency.

For undergraduate students, the overall median survey design effect was 3.1 for the 2,247 survey statistics that passed the above test for stability of the variance estimate. For graduate students the median was 1.6, and for the combined population of graduate and first-professional students the median was 2.0.

Table 7.6 Estimates and Standard Errors for Categorical Data in NPSAS:93

Categorical Variables	Undergraduate				Graduate				Graduate/First-Professional			
	Estimated Percent	Taylor Series	Jackknife Replicate	Ratio (T/J)	Estimated Percent	Taylor Series	Jackknife Replicate	Ratio (T/J)	Estimated Percent	Taylor Series	Jackknife Replicate	Ratio (T/J)
Institutional Sector												
Public, less-than-2-year	1.5	0.480	0.003	143.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public, 2-year	43.8	1.585	0.082	19.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public, bachelors	2.0	0.525	0.011	48.20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public, masters	11.2	0.914	0.793	1.15	16.0	1.435	1.164	1.23	16.0	1.435	1.164	1.23
Public, doctors	6.0	0.824	0.659	1.25	11.4	1.178	1.181	1.00	10.2	1.072	1.062	1.01
Public, first-professional	11.9	0.672	0.629	1.07	30.1	1.567	1.286	1.22	30.1	1.786	1.285	1.39
Private, not-for-profit, 2-year or less	1.6	0.325	0.008	42.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private, not-for-profit, bachelors	4.1	0.495	0.008	59.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private, not-for-profit, masters	4.3	0.315	0.243	1.30	N/A	1.068	1.222	0.87	9.7	0.955	1.083	0.88
Private, not-for-profit, doctors	5.9	0.461	0.250	1.84	N/A	1.767	1.454	1.22	29.5	1.799	1.278	1.41
Private, for-profit, less-than-2-year	4.5	0.543	0.020	27.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private, for-profit, 2-year or more	3.2	0.366	0.023	16.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Race/Ethnicity												
White	74.6	0.836	0.715	1.17	N/A	0.692	0.614	1.13	81.4	0.697	0.556	1.25
Black	11.5	0.616	0.576	1.07	N/A	0.468	0.446	1.05	6.4	0.459	0.410	1.12
Native American	1.2	0.225	0.252	0.89	N/A	0.159	0.101	1.58	0.8	0.157	0.096	1.63
Asian	5.0	0.225	0.233	0.96	N/A	0.395	0.450	0.88	7.5	0.399	0.382	1.05
Hispanic	7.8	0.561	0.607	0.92	N/A	0.312	0.294	1.06	4.0	0.288	0.258	1.12

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Table 7.6 Estimates and Standard Errors for Categorical Data in NPSAS:93 (Continued)

Categorical Variables	Undergraduate				Graduate				Graduate/First-Professional			
	Estimated Percent	Taylor Series	Jackknife Replicate	Ratio (T/J)	Estimated Percent	Taylor Series	Jackknife Replicate	Ratio (T/J)	Estimated Percent	Taylor Series	Jackknife Replicate	Ratio (T/J)
Income and Dependency Level (Income)												
Dependent, less than $10,000	2.9	0.157	0.124	1.26	N/A	0.082	0.075	1.08	0.3	0.073	0.068	1.08
Dependent, $10,000 to $19,999	4.6	0.176	0.134	1.31	N/A	0.061	0.057	1.08	0.4	0.055	0.053	1.04
Dependent, $20,000 to $29,999	5.2	0.178	0.182	0.98	N/A	0.078	0.090	0.86	0.5	0.071	0.077	0.92
Dependent, $30,000 to $39,999	6.3	0.191	0.173	1.10	N/A	0.106	0.108	0.98	0.7	0.099	0.103	0.96
Dependent, $40,000 to $49,999	7.9	0.232	0.216	1.07	N/A	0.131	0.122	1.07	1.0	0.118	0.119	0.99
Dependent, $50,000 to $59,999	6.8	0.189	0.171	1.11	N/A	0.135	0.132	1.02	1.2	0.142	0.122	1.16
Dependent, $60,000 to $69,999	4.7	0.177	0.134	1.33	N/A	0.153	0.149	1.03	1.3	0.137	0.135	1.02
Dependent, $70,000 to $79,999	2.1	0.102	0.088	1.17	N/A	0.098	0.090	1.09	0.8	0.096	0.087	1.11
Dependent, $80,000 to $99,999	2.5	0.121	0.114	1.07	N/A	0.093	0.090	1.03	0.7	0.090	0.091	0.98
Dependent, $100,000 or more	3.2	0.129	0.113	1.14	N/A	0.079	0.065	1.22	1.0	0.088	0.074	1.18
Independent, less than $5,000	6.2	0.234	0.147	1.59	N/A	0.257	0.288	0.89	7.1	0.403	0.275	1.46
Independent, $5,000 to $9,999	7.1	0.208	0.177	1.17	N/A	0.286	0.275	1.04	6.3	0.274	0.255	1.07
Independent, $10,000 to $19,999	12.1	0.291	0.258	1.13	N/A	0.554	0.512	1.08	14.7	0.518	0.455	1.14
Independent, $20,000 to $29,999	10.0	0.304	0.279	1.09	N/A	0.455	0.556	0.82	16.8	0.399	0.497	0.80
Independent, $30,000 to $49,999	12.6	0.413	0.333	1.24	N/A	0.593	0.716	0.83	27.2	0.586	0.660	0.89
Independent, $50,000 or more	6.0	0.271	0.240	1.13	N/A	0.716	0.828	0.87	19.9	0.659	0.734	0.90

Table 7.7 Design Effects for Categorical Data in NPSAS:93

Analysis Domain	Undergraduate				Graduate				Graduate/First Professional			
	No. of Estimates	First Quartile	Median	Third Quartile	No. of Estimates	First Quartile	Median	Third Quartile	No. of Estimates	First Quartile	Median	Third Quartile
Total Population	2247	2.2	3.1	5.5	1044	1.3	1.6	2.1	1174	1.6	2.0	2.8
Size of Estimate Groups												
Less than 20% or greater than 80%	1657	1.9	2.8	4.5	661	1.3	1.5	2.1	708	1.5	1.9	2.7
20% to 40% or 60% to 80%	407	2.8	4.1	8.4	282	1.4	1.7	2.2	344	1.7	2.1	3.2
40% to 60%	183	3.0	5.5	11.7	101	1.4	1.6	1.8	122	1.6	1.9	2.7
Sample Size Groups												
20 to 200	765	1.8	2.6	4.0	623	1.2	1.4	1.8	661	1.5	1.8	2.2
200 to 2,000	1104	2.2	3.1	5.5	367	1.5	1.8	2.7	421	1.7	2.3	3.4
More than 2,000	376	2.9	4.5	8.7	54	1.6	2.5	3.6	92	2.8	3.7	5.6
Institutional Sector												
Public, less-than-2-year	50	3.3	6.9	11.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public, 2-year	70	1.4	2.0	3.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public, bachelors	68	2.2	3.5	11.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public, masters	74	2.4	3.3	5.2	53	1.6	1.9	2.8	54	1.6	1.9	3.0
Public, doctors	71	2.0	2.7	5.8	52	1.4	1.8	2.5	52	1.4	1.8	2.4
Public, first-professional	71	1.7	2.2	2.8	66	1.2	1.4	2.1	68	1.8	2.8	3.8
Private, not-for-profit, 2-year or less	61	5.2	9.6	15.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private, not-for-profit, bachelors	74	4.4	8.1	17.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private, not-for-profit, masters	71	3.0	4.8	6.8	46	1.9	2.3	3.8	47	1.8	2.4	3.7
Private, not-for-profit, doctors or first professional	72	1.9	2.7	3.6	58	1.7	2.6	3.3	63	2.4	4.0	5.9
Private, for-profit, less-than-2-year	56	9.0	21.4	30.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private, not-for-profit, 2-year or more	58	4.3	9.5	13.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 7.7 Design Effects for Categorical Data in NPSAS:93 (Continued)

Analysis Domain	Undergraduate				Graduate				Graduate/First Professional			
	No. of Estimates	First Quartile	Median	Third Quartile	No. of Estimates	First Quartile	Median	Third Quartile	No. of Estimates	First Quartile	Median	Third Quartile
Race/Ethnicity												
White	79	3.5	6.0	9.9	65	1.6	2.3	3.1	66	2.2	3.0	4.3
Black	75	3.0	4.7	8.4	49	1.3	1.5	2.0	54	1.6	3.1	2.9
Native American	55	1.7	2.5	3.5	16	1.0	1.1	1.5	20	1.2	1.3	1.5
Asian	74	1.7	1.8	2.5	50	1.1	1.3	1.8	56	1.4	1.9	2.1
Hispanic	79	3.4	4.3	9.3	44	1.2	1.4	1.6	49	1.5	1.7	2.1
Income/Dependency Level												
Dependent, less than $10,000	62	2.4	3.2	3.9	11	1.3	2.1	2.1	17	1.9	2.1	2.7
Dependent, $10,000 to $19,999	64	2.3	3.1	4.7	12	1.3	1.3	1.5	20	1.5	1.5	1.8
Dependent, $20,000 to $29,999	66	2.0	2.7	3.1	16	1.2	1.2	1.3	24	1.3	1.6	1.7
Dependent, $30,000 to $39,999	67	2.1	2.7	3.1	20	1.3	1.4	1.8	25	1.5	1.9	1.9
Dependent, $40,000 to $49,999	70	2.0	2.3	3.1	23	1.3	1.4	1.5	28	1.5	1.7	1.8
Dependent, $50,000 to $59,999	67	1.9	2.3	2.7	24	1.2	1.3	1.6	31	1.6	1.7	2.3
Dependent, $60,000 to $69,999	59	1.8	2.2	2.4	21	1.2	1.4	1.5	28	1.5	1.6	1.6
Dependent, $70,000 to $79,999	58	1.5	1.8	2.3	14	1.0	1.2	1.4	23	1.1	1.5	2.0
Dependent, $80,000 to $99,999	55	1.6	1.8	2.2	13	1.0	1.0	1.1	22	1.1	1.3	1.5
Dependent, $100,000 or more	56	1.5	2.0	2.9	14	1.1	1.3	1.4	26	1.4	1.6	1.8
Independent, less then $5,000	65	3.2	4.9	6.0	51	1.4	1.6	1.7	54	2.3	2.7	4.0
Independent, $5,000 to $9,999	65	2.9	3.9	4.7	50	1.4	1.5	1.8	56	2.0	2.2	2.4
Independent, $10,000 to $19,999	67	2.7	3.6	4.5	57	1.3	1.4	1.6	61	1.6	1.8	2.1
Independent, $20,000 to $29,999	68	2.4	2.6	3.5	52	1.2	1.5	1.8	56	1.3	1.7	2.0
Independent, $30,000 to $49,999	63	1.8	2.2	3.3	52	1.3	1.6	1.9	55	1.4	1.7	2.2
Independent, $50,000 or more	56	1.6	1.9	2.6	46	1.5	1.7	2.0	48	1.5	1.8	2.2

REFERENCES

Chromy, J. R. (1979). "Sequential Sample Selection Methods." *Proceedings of the American Statistical Association Section on Survey Research Methods*, pp. 401-406.

Deville, J-C. and Särndal, C-E. (1992). "Calibration Estimators in Survey Sampling." *Journal of the American Statistical Association 87:418*, 376-382.

Folsom, R. E. (1991). "Exponential and Logistic Weight Adjustments for Sampling and Nonresponse Error Reduction." *Proceedings of the Social Statistics Section of the American Statistical Association*, 197-202.

Kalton, G. and Maligalig, D. S. (1981). "A Comparison of Methods of Weighting Adjustment for Nonresponse." *Bureau of the Census 1991 Annual Research Conference Proceedings*, pp. 105-110.

Kovar, J.G., Rao, J.N.K., and Wu, C.F.J. (1988). "Bootstrap and Other Methods to Measure Errors in Survey Estimates." *Canadian Journal of Statistics 16, Supplement*, 25-45.

Rust, K. (1986). "Efficient Replicated Variance Estimation." *Proceedings of the Section on Survey Research Methods of the American Statistical Association*, 81-87.

Woodruff, R. S. (1971). "A Simple Method for Approximating the Variance of a Complicated Estimate." *Journal of the American Statistical Association 66*, 411-414.

CHAPTER 8 1993 NPSAS FIELD TEST

8.1 Introduction

The overall goal of the NPSAS:93 field test was to evaluate the data collection schedule, systems, and procedures proposed for the full-scale study. Employing and testing methodologies in the field test that parallel the data collection procedures proposed for the main NPSAS data collection allowed these procedures to be adjusted, as necessary, before the much larger main data collection activities began. As shown in Table 8.1, the general objectives of the NPSAS:93 field test were to (1) evaluate the timing of key data collection activities; (2) evaluate data collection systems; (3) develop and test methods for increasing participation in the NPSAS; and, (4) determine whether students can be induced to take the GRE.

One of the main areas investigated during the field test was the *timing of key data collection activities*. Much of the data required in NPSAS is time-sensitive, and institutions are on various different schedules of enrollment that only partially overlap the NPSAS data collection year. Thus, it was important during the field test to determine an optimal way to fit each institution's academic year into a standard NPSAS year beginning July 1 and extending through June 30. The NPSAS data collection must be scheduled to occur at a time during the institution year when institutions have complete enrollment and graduation lists available, because these lists form the core of the student sample frame, a central element of the overall NPSAS sample design. Other areas, such as the disbursement of financial aid in each institution, are also affected in important ways by the integration of the institutional and NPSAS years.

A second objective of the field test was to *evaluate the integrated data collection systems used to obtain information from institutions, students, and parents*. Data collection plans for NPSAS:93 are complex, because data from institutions, students, and parents will be collected using the combined resources of three distinct, automated data collection instruments. These integrated data collection systems are designed to allow information to be collected from the most appropriate source and, where necessary, verify or enhance data from one source through responses from another type of respondent.

Success of the NPSAS full-scale study depends on gaining the cooperation of numerous individuals within institutions, as well as gaining the cooperation of students and parents. Thus, a third goal of the field test was to *learn about the kinds of barriers to successful participation that might be expected for each type of respondent and to develop methods of overcoming these barriers* for the full-scale study.

Finally, the fourth major goal of the NPSAS:93 field test was to investigate whether it was possible to *obtain GRE test scores from a subsample of students*. This feature of the B&B base year was designed to obtain these scores for students who have taken the GRE, and to persuade students who had not taken the GRE to do so.

Table 8.1 General Objectives of the NPSAS:93 Field Test

Area of Evaluation	Specific Topics
Timing of key data collection activities	• Integration of institutional and NPSAS academic years • Availability of enrollment and graduation lists • Timing of disbursement of financial aid
Data collection systems	• CADE for Institutions • CATI for Students • CATI for Parents
Methods for increasing participation	• Barriers to participation at institutions • Barriers to student participation • Barriers to parental participation
GRE Component	• Persuading students to take the GRE • Test procedures for obtaining GRE scores • The impact of reimbursement on cooperation

Each of these general goals must be assessed across the sample design, data collection instruments, and data processing procedures for the full-scale NPSAS:93. The following sections discuss details of how these general areas were evaluated across each of the NPSAS data collection tasks during the field test.

8.1.1 Institution Survey

Institutions constitute the first source of information for the NPSAS. Institutions provide the enrollment files and graduation lists that form the frame for the student sample and critical locating, enrollment, and financial aid data about the students selected for the study. In the field test, procedures for enrollment list acquisition were evaluated in order to assure that a comprehensive and accurate student sampling frame could be developed using these procedures. Procedures for abstracting study data elements from administration records maintained by institutions were also evaluated. Of particular interest was an assessment computer-assisted data entry (CADE) software developed for the study and its use by institutional staff. This section describes the procedures used to contact institutions, obtain enrollment and graduation lists, and abstract financial aid and other data from institution records.

Institution Contact

Because essential sampling information and student financial aid data are obtained from institutions sampled as part of the NPSAS design, institutional participation is critical for the success of the full-scale study. For the field test, 88 institutions were asked to participate in the field study. These institutions were selected on the basis of specific criteria, not randomly, to participate in the NPSAS field trial. In order to avoid the selection into the field test pool of any institutions eligible for selection in the full NPSAS study, only institutions that were not located in NPSAS primary sampling units were selected. Of the 88 institutions selected to participate in the field trial, 70 institutions, or 80 percent, provided enrollment and graduation lists. If an institution declined to participate in the field test, the reason was recorded and another institution was substituted. Because the field test was not intended to be statistically representative, there was no intent to spend project resources on intensive refusal conversion.

The initial contact with each institution was a letter to the chief administrator, signed by the (then) Acting Commissioner of the Office of Educational Research and Improvement, and materials describing the purpose of the NPSAS program. These advance letters were mailed on February 14, 1992. In the interest of assuring that the letters arrived and were delivered to the chief administrator in a timely manner, the materials were sent via an express mail service. A service was used (rather than the U.S. Postal Service) so that, once delivered, the packets could be traced in the event they were misguided through the institutions inter-departmental mail. Each of the tasks requested of the sampled institutions -- naming an institutional coordinator for further contacts, confirming IPEDS data, providing enrollment files, and providing information from student administrative files -- was clearly outlined in the advance letter. These materials also provided assurances that all data provided by the institution would remain confidential. The need for information to locate students who would be invited to participate in the study was explained, with the assurance that the coordinator would be consulted on the timing and on a means of collecting the information that would be most efficient, least time-consuming, and would provide the lowest possible burden to the staff. Endorsements from organizations with an interest in the study were included in the materials accompanying the initial letter. All institutions that did not respond following the initial mailing were contacted by telephone. The senior data collection staff reviewed each case for a possible personal call.

Based on the experience of the NPSAS:90 contractor, we expected private, for-profit institutions would present two unique problems, and thus were a special focus of the NPSAS:93 field test. First, it was anticipated that these institutions would be more reluctant to participate in the research because they might perceive the research activities of NPSAS to be of marginal utility to their primary business. Second, it was anticipated that even among participating institutions the quality of data they provided would suffer because the records might be minimal or nonexistent, may have been moved to centralized locations and be difficult to retrieve, or the institution might no longer be in business.

Enrollment and Graduation List Acquisition

The enrollment and graduation files provided by participating institutions form the sample frame for the telephone surveys of students. A special focus of the NPSAS:93 field test was to examine the availability, comprehensiveness, and quality of enrollment and graduation provided by these institutions. Each institution participating in the field test was asked to submit one list containing no duplicate entries of all eligible students enrolled separated by level (e.g., undergraduate, graduate, and first-professional) for all terms beginning between July 1, 1991 and June 30, 1992. In addition, coordinators at 4-year colleges and universities were asked to submit a list with no duplicate entries of all students completing (or expected to complete) baccalaureate degrees between July 1, 1991 and June 30, 1992. To be eligible, a student must have a high school diploma (or its equivalent) and must be enrolled between the above dates in a course for credit, in a degree or formal award program of at least 3 months duration, or in an academically, occupationally, or vocationally specific program of 3 months or 300 hours. The likely degree of institutional participation in the record abstraction process was an important factor for planning the full-scale study.

Multiple campus institutions

The results of the NPSAS:90 data collection demonstrated potential problems generated as a result of sampled institutions having multiple campuses. Ideally, such multi-campus clusters would be listed only once under the name of the main branch of the institution in the IPEDS frame of institutions. If the main branch were selected for the sample, the affiliates, as well as the main branch, would supply independent enrollment lists in order to build a comprehensive frame of students that contained no duplicate listings.

However, because of mergers and acquisitions among institutions, a campus listed in IPEDS as an affiliated branch of a sampled institution may formerly have been an independent institution with a separate listing in the IPEDS. If the IPEDS information were not updated in a timely fashion, that affiliate campus in effect had two opportunities for selection into the NPSAS sample: once as a separate institution in its own right (the out-of-date listing) and once in its new identity as an affiliate of another institution (the current listing).

Several decisions were made in developing the NPSAS:93 field test to allow appropriate inclusion of institutions listed in the IPEDS under multiple entries (as described in the previous paragraph). If *both the main branch and the affiliate were selected* for NPSAS, the institutional coordinator at the main branch was asked to provide enrollment lists for both sites, and for other campuses of the institution as well. If *only the main branch was selected* in the NPSAS frame, lists from the affiliate were not requested because they had already had a chance to be selected for the sample. If *only the affiliate were selected*, lists were obtained from the main branch of the institution and all of its affiliated campuses. Procedurally, this meant checking for potential IPEDS listings for all affiliated campuses. The extent of this verification and its efficacy were important for planning the full-scale study.

Abstracting Financial Aid and Other Data from Student Records

Following student sample selection, institutions were recontacted at the second stage of the survey and asked to provide locating data, data on financial aid, and data on periods of enrollment for each eligible student, to be used in conducting a telephone survey of students.

The NPSAS:93 study design calls for collecting the data elements for the institution survey by providing participating institutions with Computer Assisted Data Entry (CADE) software that can be used at the sampled institution to enter the data for each eligible student. A list of the names of sampled students, as well as data describing the institution, are preloaded into the CADE software databases. However, in order to minimize the burden and risk to participating institutions, the CADE software was designed for use by institution staff with very modest requirements for computer equipment, skills, and study-specific instruction. The CADE software designed and tested as part of the NPSAS:93 field test operated from floppy disk drives so as to not inconvenience participating institutions by consuming storage space on the hard disk drive of the computer used to conduct the data entry. Acceptance of this task by the institution, and their ability to complete the task accurately, were key questions for the field test.

The field test CADE instrument was designed to allow entry of data abstracted from the institutional data files on each student in five general areas:

(1) locating and student characteristics;

(2) enrollment data;

(3) student financial aid data;

(4) student need analysis and budget data;

(5) financial aid application information.

The locating and student characteristics section of the CADE software allowed entry of information on up to four addresses and telephone number for each sampled student (student's local, student's permanent, parent's address, and address of another person who would know the student's whereabouts) as well as demographic information about the student (marital status, ethnicity, citizenship, high school degree), admissions test scores (SAT, ACT, GRE, and so on), and grade point average. The enrollment section of the CADE software recorded the terms enrolled, including type of program, type of credit awarded for the term, student's educational level tuition and fees, major field of study, and attendance status. A third section of the CADE system recorded data on student financial aid requests, amounts of aid received by each student, and the type of financial aid award (Federal, State, institution, Veterans' Administration or Department of Defense, graduate or first professional financial aid, and other sources of financial aid, including employers, foundations). A fourth section recorded the results of student need analysis and budget information (tuition and fees, room and board, Pell Grant index, Expected Family Contribution, and so on). The fifth section of the CADE

was used to record data abstracted on financial aid application information from one of the common output documents used by most institutions (Student Aid Report, Financial Aid Form Need Analysis Report, Comprehensive Financial Aid Report, or similar reports).

Initial materials mailed to the institutional coordinators described procedures whereby staff at each institution would use the CADE software for the record abstraction. However, if the institutional coordinator was unable, or unwilling, to participate in this self-administered approach, project staff were instructed to explore two alternative approaches. One alternative was to attempt to download the information required by NPSAS from existing data systems maintained by the institution. A second alternative was to send project field staff to the institution to perform the record abstraction using the CADE software on laptop computers. Obviously, for cost reasons, the self-administered CADE approach was the preferred method, avoiding both costly travel to the institution and potentially expensive programming effort necessary to convert data from the institution's system to the CADE format. Moreover, we reasoned that some institutions might prefer the self-administered approach because it provided better confidentiality protection for students not selected for the study.

8.1.2 Telephone Survey

The 70 participating institutions in the field test provided enrollment and baccalaureate lists for a total of 7,953 students. Table 8.2 presents breakdown of the student sample by type of institution and level of student. Approximately equal numbers of eligible students were obtained in non-B&B sample at the undergraduate, graduate, and professional levels. From the baccalaureate lists, 4,621 students were identified.

In conducting the telephone interviews with students, the CASES CATI system presented interviewers with screens of questions, with the software guiding interviewer and respondent through the questionnaire, automatically skipping inapplicable questions based on response patterns or suggesting appropriate wording for probes if a respondent was uncertain how to answer a question. The system also contained help screens that can be used at the interviewer's discretion to help clarify the intent of a question. The NPSAS CATI system was preloaded with information obtained from the CADE institution system so students and parents could be asked to verify data obtained from institutional records.

Preloading institutional information to facilitate student and parent interviewing is an important element in the NPSAS:93 data collection plan. How well this procedure worked mechanically and whether it helped to achieve the goal of minimizing student and parent respondent burden were important issues for the field test and for planning the full-scale study.

Table 8.2 Student Sample for the NPSAS:93 Field Test

Type of Institution	Total Sampled Students	Undergraduate	Graduate	First-Professional	Baccalaureate*
Public					
4-year, Other	1,138	117	158	0	863
2-3 year	124	124	0	0	0
Less than 2-year	128	128	0	0	0
All Public	4,362	566	582	606	2,618
Private					
4-year, Other	994	105	103	0	786
2-3 year	145	145	0	0	0
Less than 2-year	128	128	0	0	0
All Private	3,381	545	455	378	2,003
Private, For-Profit					
Less than 2-year	106	106	0	0	0
2-year or more	104	104	0	0	0
All Private,For-Profit	210	210	0	0	0
All Types	7,953	1,311	1,037	984	4,621

* Students who earned BA/BS between July 1, 1991 and June 30, 1992

Student and Parent Participation in the Study

Attaining the high completion rate required by NCES statistical standards for the NPSAS:93 full-scale (92% for the B&B cohort and 85% overall), will require concerted efforts to locate both students and parents and persistent effort to convert potential nonrespondents. The goal of the field test effort to locate students was designed to permit evaluation of the quality of address information obtained from the participating institutions and assess the level of effort necessary for further tracing and locating efforts. An additional goal of the field test was to learn about the reasons for refusal and successful methods of averting final refusals.

Letters were mailed to all field test sample members (students and selected parents), informing them about the NPSAS and of our intention to contact them for an interview. Sample subjects were also asked to verify the addresses supplied by the institutions . For ease and convenience in responding, postpaid return postcards were enclosed (that had a "current address" label affixed) so that the respondents could easily provide updated address information. The student update return postcards requested that the student provide tracing information about parents, as well as obtaining corrected address and telephone number information for the student. Return postcards for parents requested similar updated or confirmed information about the student's current address and telephone numbers. Updates or confirmations were entered into the tracing and locating module (TLM) of the CATI system.

The NPSAS CATI system was designed so that neither the student nor the parent interview had precedence. This permitted the maximum flexibility and cost efficiency in conducting both student and parent interviews. If a parent was contacted during the process of locating a student, interviewers were permitted to conduct the interview with the parent prior to conducting the interview with the student. Similarly, if a student were contacted first, the student interview could take place even though a parent interview had not been completed.

Item Order and Item Wording

Many of the items in the student and parent questionnaires have been asked in previous rounds of the NPSAS. Nonetheless, there have been numerous additions and modifications to questions. Moreover, the desire to obtain base-year data from the B&B cohort led to the development of a number of items that did not appear on the NPSAS:90 questionnaire. The quality of all modified and new items have been assessed by examining frequency of valid responses and, where possible, comparing responses with external data sources (for example, amounts of aid reports compared with actual administrative ranges of aid amounts).

GRE Component

A feature of NPSAS:93 that received special attention in the field test was the outcome assessment among the B&B cohort. It was proposed to use scores from the Graduate Record Examination (GRE) administered by the Educational Testing Service (ETS) as a measure of student's achievement. As contractor for NPSAS:93, AAI contacted ETS to obtain GRE scores as long students gave their permission. An important field test issue was whether students who have not planned to take the GRE could be persuaded to do so.

In the field test, procedures for obtaining GRE scores for sample members who have already sat for the exam or who had registered for the GRE (in October 1992, December 1992, or February 1993) were evaluated as were procedures to induce students to take the GRE if they had not planned to take the exam. All of these students were asked to participate in the GRE component of NPSAS. Fees to ETS for the exams were paid directly by NPSAS so that the students were not burdened with the financial expense of taking the test or of ordering additional test score reports.

Of students who have neither taken nor plan to take the GRE, about 2,000 were asked to take the exam as part of the NPSAS. Two reimbursement levels ($20 and $35) and the impact of providing this reimbursement in full prior to taking the test, versus split reimbursement payments (an initial $5 payment to students prior to the exam with the balance provided after taking the exam) were tested.

CATI interviews included an item asking B&B cohort students their status with respect to the GRE. Students who had already taken or registered for the exam were asked to complete the score report form designating Abt Associates as a recipient.

The CATI system randomly selected students among the balance of the B&B cohort

who have never sat for the GRE and are not currently registered for the exam. This approach ensured that the exact number of appropriate respondents would be selected for the assessment component and for each of the experimental treatment subgroups.

Students who agreed to take the GRE were sent registration materials in a second mailing. Students who indicated they would not take the exam were mailed refusal conversion materials stressing the importance of the NPSAS and of the GRE component.

To ensure addresses were correct for sending final payments, the initial mailing included a return postcard in case the respondent changed addresses (and/or telephone) between the time of the interview and the time for final installment payments (a likely event for recent college graduates). This also provided an unobtrusive approach to maintaining contact with sample members who accepted the option (which could facilitate subsequent tracing for B&B).

8.2 Evaluation of Survey Administration

8.2.1 Results of the Institution Survey

The field test provided an opportunity to evaluate procedures used to recruit institutions and enhance the accuracy and completeness of the information they provided. Specifically, the institutional component of the field test focused on the following topics: (1) collection of accurate enrollment and graduation lists; (2) methods of data collection; and (3) collection of accurate cumulative information for the B&B cohort. Initial contacts with the institutions were made by mail beginning February 14, 1992. List acquisition was completed September 4, 1992. Record abstraction began July 6, 1992 and was completed November 13, 1992.

Initially, 80 institutions were selected to participate in the field test. These institutions were selected to fulfill quotas for the major NPSAS strata. The selection process was designed to ensure that institutions that may have fallen in the sample frame for the full-study were not selected to participate in the field test, thus avoiding contamination of the final NPSAS:93 sample. Of the 80 institutions originally selected to participate in the field test, eight refused and were replaced by institutions with similar characteristics. Thus, a total of 88 institutions were invited to participate in the field test. At this initial stage, institutions were counted as participating if they agreed to provide an enrollment list. Table 8.3 shows the overall participation levels among institutions. Of the 88 invited to participate, 70 institutions, or 80 percent, actually provided enrollment lists. As expected, the lowest participation was among private, for-profit institutions (60 percent, Table 8.3). Private institutions participated at a higher rate (78 percent), while the highest levels of participation was observed among public institutions, where participation was 85 percent for the field test.

The typical reason for refusal across all three types of institutions was that participation in the study was too burdensome. For those institutions receiving federal funding, the survey was seen as simply causing more paperwork in addition to the existing

administrative burden of complying with federal reporting regulations. For other institutions (regardless of whether they received federal funds), the goals of the study were not seen as important enough to warrant the time and expense of participation. Confidentiality of student financial information was also a concern, particularly for institutions that did not participate in federal programs. Even when study confidentiality procedures were explained, institution representatives expressed fears of adverse reactions, including legal action, from students if the institution provided financial information to a federal agency when the institution did not receive federal funding. One institution would participate only on the condition that signed consent forms were obtained from all students at the institution, a condition that proved to be infeasible within the field test schedule.

Table 8.3 Institution Participation Summary

Type of Institution	Invited to Participate	Initially Agreed to Participate	Provided Enrollment/ Graduation List	
			N	%
Public				
4-year, PhD	21	20	19	
4-year, Other	13	12	11	
2-3 year	4	4	2	
Less than 2-year	3	3	3	
All Public	41	39	35	85%
Private				
4-year, PhD	17	15	14	
4-year, Other	12	10	10	
2-3 year	5	4	3	
Less than 2-year	3	2	2	
All Private	37	31	20	78%
Private, For-Profit				
2-year or more	4	4	3	
Less than 2-year	6	3	2	
All Private, For-Profit	10	7	6	60%
All Types	88	77	70	80%

*Five institutions initially agreed to participate but later refused. Two others agreed but never provided an enrollment list

Enrollment and Graduation Lists

The ability of participating institutions to provide comprehensive and accurate enrollment and graduation lists in a timely was a critical element of the field test. Because these lists were used to construct the student sample frame, their accuracy was key to the validity of the study. Detailed instructions were prepared for the institutions requesting that

they provide lists of students enrolled as well as each student's institution identification number and education level. The request was for an unduplicated, machine-readable list of all students enrolled between July 1, 1991 and June 30, 1992 and a separate list of expected baccalaureate recipients, including major field of study (for sampling the B&B cohort), however, the instructions also stressed that NPSAS would be very flexible in working with whatever format and medium was convenient for the institution.

As part of quality control on the list acquisition procedures, the number of students in each institutions enrollment file was compared with expected numbers of students calculated from the NCES Integrated Postsecondary Education Data System (IPEDS). Total number of students and, where applicable, subtotals of undergraduate, graduate, and first professional students, and subtotals of expected baccalaureate degree recipients were compared with comparable IPEDS data. In cases of significant discrepancies, counts based on the enrollment lists were verified with participating institutions before sampling and, if necessary, additional sampling information was provided.

Because the initiation of subsequent phases of the NPSAS survey -- record abstraction for sample students and the telephone interview of students and parents -- depended on the construction of a sample frame for each institution, the schedule for the project depends on the timely response by institutions to requests for enrollment and graduations lists. Plans for the field test and for the full-scale study call for the institutions to provide comprehensive enrollment and graduation files within a few weeks so that the record abstract portion of the survey could be initiated and completed in a sufficient number of institutions to begin interviewing of students by early summer.

Table 8.4 summarizes the types of enrollment lists that were received by type of institution, and shows that 60% of the participating institutions provided machine-readable lists. Smaller institutions with less differentiated student bodies (private, for-profit institutions, 2-3 year and less than 2-year institutions) almost exclusively provided the information in hard-copy format while larger institutions with more diverse (in terms of levels, baccalaureate degree recipients) were mixed in their preference for hard-copy or machine-readable lists.

Table 8.4 Types of Enrollment Lists Provided by Type of Institution

Type of Institution	Hard Copy Lists		Machine-Readable Lists		All	
	N	%	N	%	N	%
Public						
4-year, Ph.D.	4	21%	15	79%	19	100%
4-year, Other	0	0%	11	100%	11	100%
2-3 year	1	50%	1	50%	2	100%
< 2-year	2	67%	1	33%	3	100%
All Public	7	20%	28	80%	35	100%
Private						
4-year, Ph.D.	7	50%	7	50%	14	100%
4-year, Other	3	30%	7	70%	10	100%
2-3 year	3	100%	0	0%	3	100%
< 2-year	2	100%	0	0%	2	100%
All Private	15	52%	14	48%	29	100%
Private, For-Profit						
2-year or more	3	100%	0	0%	3	100%
< 2-year	3	100%	0	0%	3	100%
All Private,For-profit	6	100%	0	0%	6	100%
All Institutions	28	40%	42	60%	70	100%

As can be seen from Table 8.5, quality of the enrollment lists was a problem for institutions that provided hard copy lists instead of machine-readable lists. Among the 28 institutions providing hard copy lists, eight provided lists with duplicate entries, three provided lists not in order of education level, and six lists failed quality control checks. For machine-readable lists, sorting files as well as identifying and eliminating duplications can be done through an automated process. However, the combination of high numbers of institutions providing hard copy lists that cannot be easily sorted or checked, combined with the high rate of duplication and error, suggests that increased efforts must be made to enlist the cooperation of institutions in providing machine-readable lists of students.

Table 8.5 Problems with Hard Copy Lists

Problem	N	Percent
Institutions providing hard copy lists	28	100%
Institutions with duplicated entries	8	29%
Institutions not ordering lists by education level	3	11%
Lists failed quality control checks	6	21%

Figure 8.1 shows the list acquisition time, measured in months, from the date the institutional coordinator was assigned the task by the chief administrator. The histogram indicates the percent of lists received each month, while the horizontal line indicates the cumulative percent of lists received across time. Plans for the field test and for the full-scale study call for the institutions to provide comprehensive enrollment and graduation files within a few weeks. However, the cumulative percent line in Figure 8.1 shows that less than 5% of the field test institutions provided lists by the end of the first month, only a quarter of the institutions provided lists by the end of the second month and that half took longer that three months to complete the first phase of the study. Although nearly all institutions provided lists by the end of the fifth month, the length of time required in the field test to complete this task is very problematic for achieving the schedule objectives of the full-scale project.

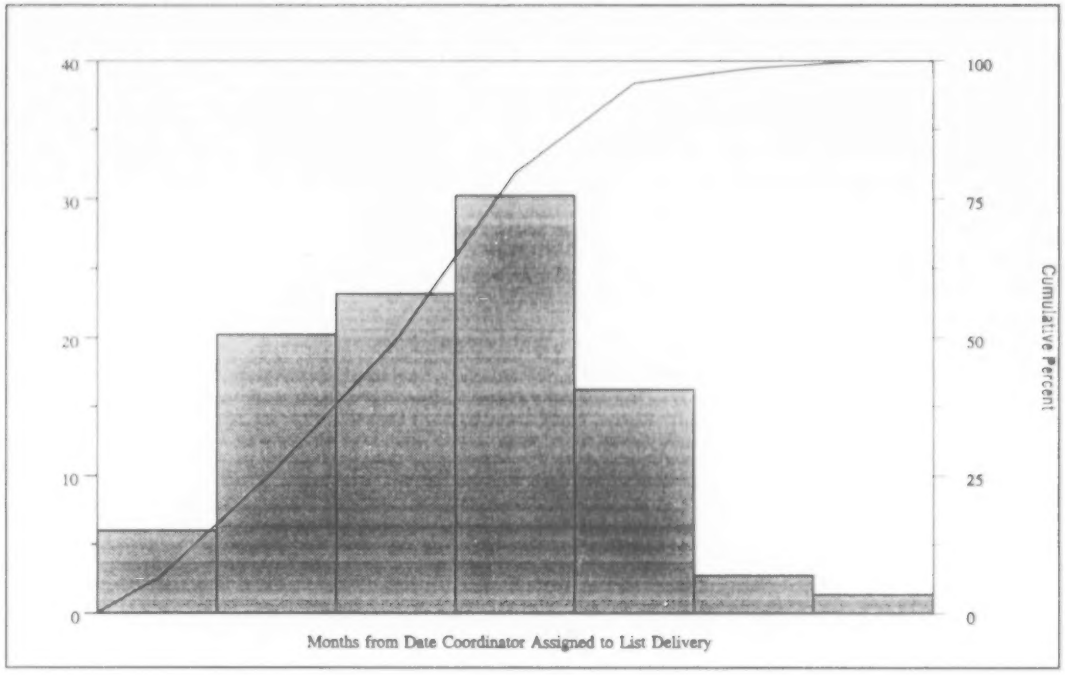


Figure 8.1 List Acquisition Time in Months

Record Abstraction

Once the enrollment and graduation files were provided, student samples were selected for each institution on a flow basis. A total sample of 7,953 students was selected for the record abstract process and ultimately for the student telephone interview (refer to section 2.2 for further discussion of the telephone survey).

Several types of resistance to the use of CADE were encountered. As anticipated, in some cases, the admissions office or the financial aid office did not have access to a personal computer compatible with the CADE software. Administrators who did have access to appropriate equipment had concerns about how the external software might affect existing files or programs on their machines.

Institutions that indicated reluctance to use the CADE method in the return postcard were contacted by telephone in an attempt to persuade them to reconsider. In the field test, various procedures were explored to overcome anticipated resistance to use of the CADE method. Figure 8.2 indicates the changes in the choice of CADE method among institutions at three-week intervals during the course of the field test. These data show that there was variation across time in the preferred CADE method. In July, the modal option selected was

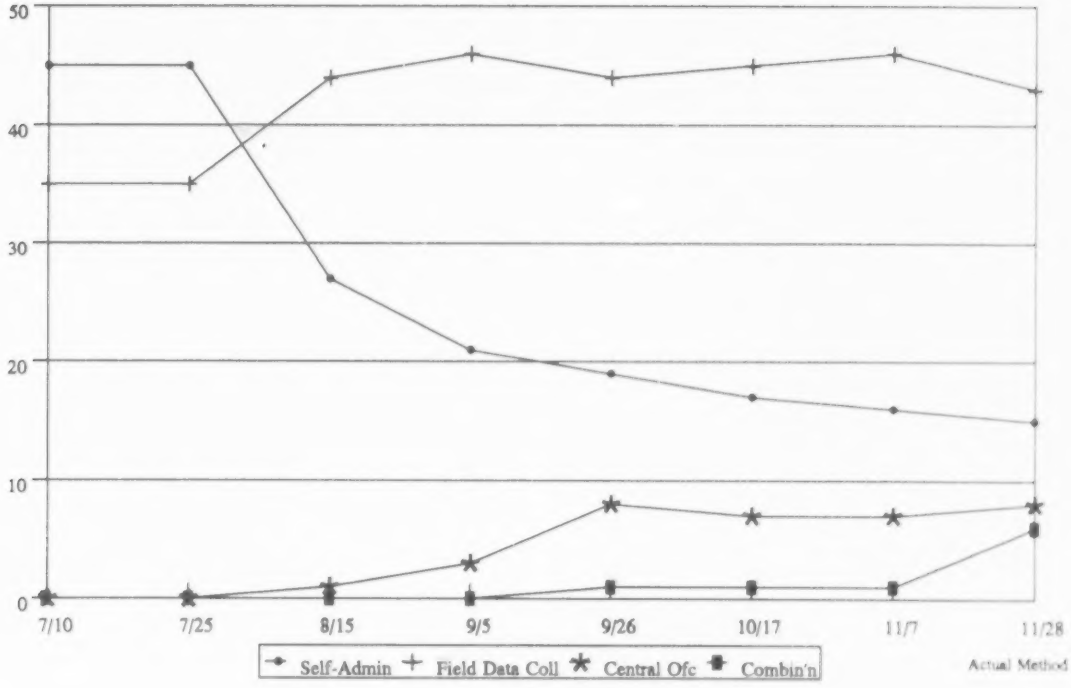
self-administered CADE, but by November the modal choice was for a field interviewer to conduct the CADE abstraction. This is in large part due to institutions that agreed to the self-administered method but then asked to have a project field data collector complete the task.

One finding that is important to note here is the variety of actors who may get involved in the NPSAS data collection. Our first contact was with the chief administrator of the institution who, in general, was the individual responsible for making the decision to participate in the study. The second contact was with the person named as the project's institution coordinator. This was the individual with whom we discussed the data requirements of the study and the options for abstracting administrative data. In the larger institutions, and in some smaller institutions as well, the information requested in the CADE record abstract was not maintained in a single office within the institution. Because the initial request was for enrollment data, an individual in the registrar's office may have been named as the institutional coordinator. This person may have had little knowledge of the administrative files maintained by the office of financial aid so it was only when the record abstract process was initiated in the financial aid office that it was determined that the self-administered method was not appropriate.

The resulting summary of abstraction methods chosen by institutions in the field test is shown below in Table 8.6. Of the 70 institutions providing student enrollment and baccalaureate lists, sixty percent, or 42 institutions, opted to have CADE records abstraction conducted by a field interviewer. The method originally proposed in the NPSAS:93 study design -- self-administered CADE -- was selected by only 20 percent of participating institutions. If the trend found in Table 8.6 holds, these results indicate that a major shift may be required in the procedures used to implement the full NPSAS, because nearly 2 out of 3
institutions participating in the field test selected a very different, much more expensive mode for entry of the results of record abstraction.

Table 8.6 Record Abstraction Methods

Type of Abstraction Method	N	Percent
Field Interviewer	42	60%
Self-administered	14	20%
Field interviewer and self-administered combination	4	6%
Sent in to a central office for off-site abstraction by Abt/RTI	6	9%
Central office and field interviewer combination	3	4%
Refusal	1	1%
TOTAL	70	100%



Combinations are self-administered and field data collector (FDC) or FDC and central office

Figure 8.2 Intended CADE Method at Three-Week Intervals

Figure 8.3 indicates the date of completion of student record abstractions. This chart clearly indicates variability in the timing of completed CADE record abstractions. In particular, the average time span for 13 completely self-administered institutions to complete the CADE and return the data was 7.88 weeks. It is important to note that this figure is nearly double the four-week period used in planning the field test.

Table 8.7 shows the number of complete student records obtained through the record abstract portion of the institution survey. Of the original sample of 7,953 students, usable record abstracts were obtained for 7,785 students. The difference of 168 includes cases from an institution that refused to complete the record abstract task after sending in an enrollment file (119 cases) and 49 cases from participating institutions that were not complete. Of the cases with usable record abstracts, a net sample of 7,417 students eligible for the telephone interviewing component of the NPSAS: 4,177 from public institutions, 3,032 from private institutions, and 272 students from private, for-profit institutions. Of the total 7,953 selected cases, 4.7% of students were ineligible, as indicated by Table 8.7; 93.3% of the selected student sample resulted in final record abstract (final CADE) record.

Comparison of CADE diskettes completed by institution staff and by field data collectors, completed during the editing of record abstract data prior to loading into CATI, showed no differences between these types of CADE users in the field test. Once agreeing to complete the record abstract task, institution staff were conscientious about providing all of the requested data. Similarly, except in some unusual circumstances were data were simply not available, field data collectors were able to track down the information requested in CADE.

Thus, as a rule, most of the sections of the CADE record abstract software were completed either by institution staff or by field data collectors. An exception was the section requesting financial aid information on baccalaureate recipients for as long as they attended the sampled institution and for financial aid transcripts from other institutions that they may have attended. The intent of this section was to be able to build a history of financial aid for the B&B student's undergraduate experience. In most of the institutions, this information was simply not available in a way that was amenable to efficient record abstraction either by the institution staff or by field interviewers.

Figure 8.3 Weekly and Cumulative Completion of Student Abstracts

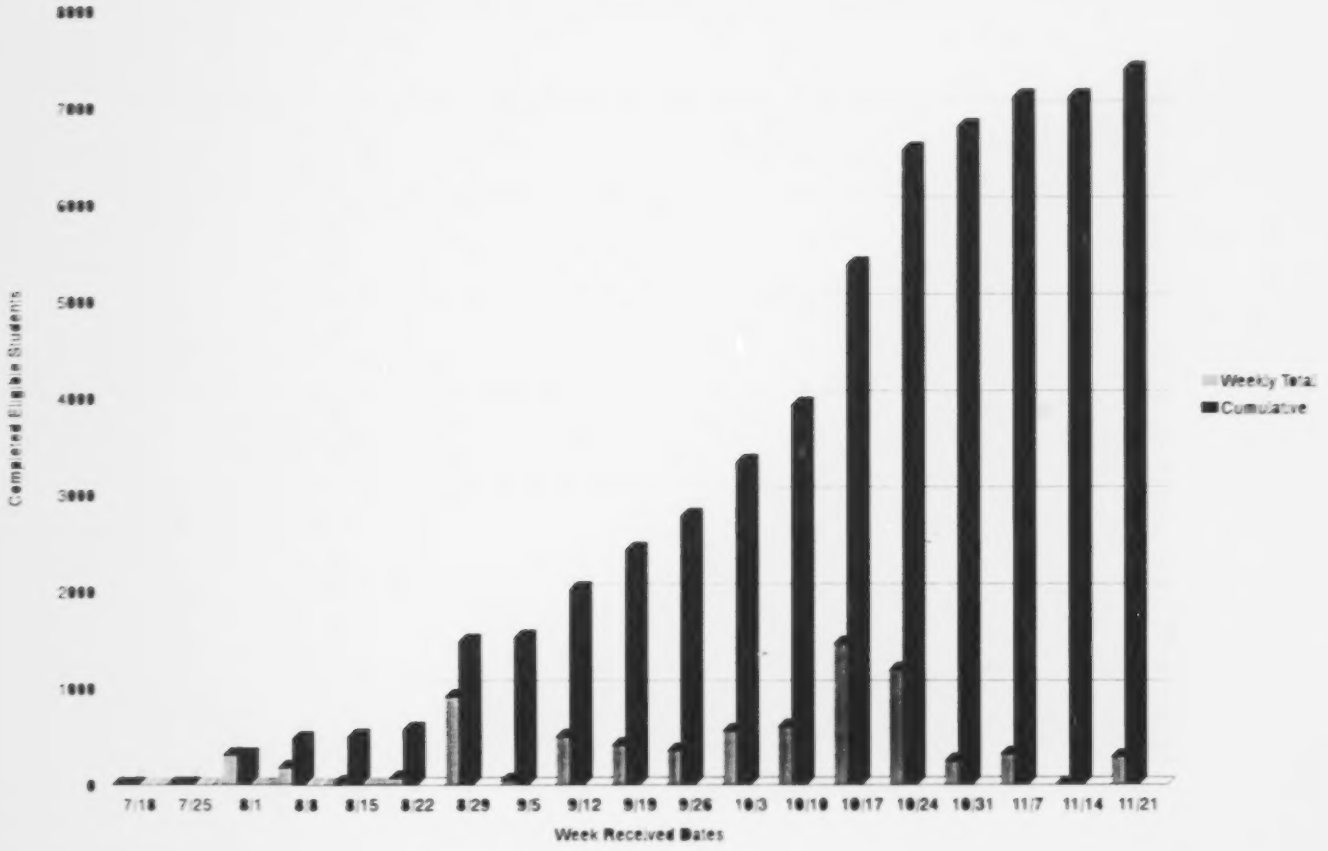


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Table 8.7 Eligibility Status of Student Sample

Type of Institution	Original Sample Size	Excluding Refusals, Unusable Data	Ineligible Cases	Percent Ineligible	Final CADE Sample Size	Percent Final CADE
Public						
4-year, PhD	2,972	2,972	105	3.5%	2,867	96.5%
4-year, Other	1,138	1,138	54	4.7%	1,084	95.3%
2-3 year	124	124	19	15.3%	105	84.7%
Less than 2-year	128	128	7	5.5%	121	94.5%
All Public	4,362	4,362	185	4.2%	4,177	95.8%
Private						
4-year, PhD	2,114	1,995	70	3.3%	1,925	91.1%
4-year, Other	994	945	41	4.1%	906	91.1%
2-3 year	145	145	8	5.5%	137	94.5%
Less than 2-year	128	128	64	50.0%	64	50.0%
All Private	3,381	3,213	183	5.4%	3,032	89.7%
Private, for-profit						
2-year or more	104	104	1	0.1%	103	99.0%
Less than 2-year	106	106	1	0.1%	105	99.1%
All Private, for-profit	210	210	2	0.1%	208	99.0%
All Types	7,953	7,785	370	4.7%	7,417	93.3%

8.2.2 Result of the Telephone Survey

As is the case with the institution survey field test, the field test of the student and parent telephone survey was designed to serve a number of objectives. First, the field test provided an opportunity to assess features of the CATI system, in particular, the procedures for preloading institution data collected in the CADE software into the questionnaires administered through CATI. Over 125 data elements could be preloaded from CADE to CATI, including locating data (names, addresses, and telephone numbers of students, parents, and other possible informants), as well as information abstracted from student administrative records (dates of attendance, major field of study, financial aid application data, and financial aid awards). In addition to the preload procedures, the CATI system developed for NPSAS made extensive use of grid formats that allow multiple entry of data on each screen. Finally, software was developed for computer-assisted coding of institutions attended by the student (in addition to the institution selected for NPSAS), for the student's major field of study, and for the student's occupation and industry.

Second, although most of the questions used in NPSAS:93 were tested in the NPSAS:90 field test and used in the NPSAS:90 full-scale survey, many, especially those administered to the B&B cohort for the base year, were newly developed for the 1993 cycle. In addition to issues related to the technical performance of the CATI system, a goal of the field test is the assessment of how well new questions were understood by respondents and whether they provided meaningful responses.

The field test also allowed the project staff to assess the extent of student locating problems and evaluate procedures for locating students based on the address information provided by institutions. Information about this issue is quite useful in planning for the full-scale effort and assuring that adequate procedures are in place to deal with potential locating problems.

Finally, requests made to students to participate in the GRE component of the study were initiated in the telephone survey and student participation in the GRE component was tracked as piece of this survey. Result of the field test of the GRE component are critical in the decision to implement this component in the full-scale study.

Telephone interviewing began September 12, 1992 and ended December 18, 1992.

Locating

Because the field period for the field test was constrained, we did not attempt to locate all of the sample members. Instead, a simple random subsample of 1,000 was selected for the purpose of determining locating rates. Of this subsample, 95% were located, indicating that locating data obtained from the institutions, combined with typical locating procedures (including address correction requests on advance mail copies, requests to directory assistance, contacting the parent's of sampled students) were sufficient to locate sample members.

Locating procedures began with the addresses and telephone numbers provided by the institutions. As part of the record abstraction, institutions were asked to provide up to four addresses: student's local and permanent addresses, parents' address, and the address of another person who might know of the student's whereabouts. In many instances, students in the sample lived at their parents' home and attended a local institution so that the student's local and permanent addresses and the parents' address were all the same. For this reason, the modal number of addresses and telephone numbers supplied by the institutions was one. However, in most instances this address was enough to locate the student and, if necessary, the parent.

Interviewing Students and Parents

As indicated in the previous section, the field period for list acquisition and record abstraction from the institutions exceeded the project schedule by several months. For this reason, the telephone interviewing could not be started and completed within original project schedule. Rather than further delay key planning tasks leading to the full-scale survey, it was decided that the field test field period should be curtailed, even though this decision meant not completing as many student and parent interviews as planned.

Table 8.7 shows that 7,417 eligible student records were loaded into the CATI system for student interviewing. Because of project scheduling constraints, the field period was concluded before all of these cases could be worked. A total of 4,788 student interviews were completed. A subsample of 1,000 students was selected for use in projecting the level of effort necessary to achieve the contracted completion rates of 92% among the B&B cohort and 85% overall. Table 8.8 presents the results.

Table 8.8 Telephone Survey Participation, Subsample of 1,000 Students[a]

	Total Student Subsample	B&B Cohort Subsample	Non-B&B Cohort Subsample	Parents
Initial sample	1,000	245	755	427
Ineligible	21	5	16	4
Deceased	2	1	1	2
Out of the Country[b]	17	10	7	15
NET SAMPLE (100%)	960	229	731	406
Completed Interviews	740	172	568	282
Partial Interview	3	2	1	5
Response Rate[c]	77.4%	76.0%	77.8%	70.7%

[a] Student subsample selected from the original institutional sample of 7,417 eligible students. Parents were selected during the student interview.

[b] Out of the country includes students/parents with foreign addresses who could not be reached during the field period.

[c] Response rate = (Completed cases + Partial cases) / Net sample

Of the 1,000 sample students, 21 were found to be ineligible during the telephone interview, either because they were high school students or because they did not attend courses during the NPSAS year. This low rate (2%) represents errors or oversights during the record abstract process for excluding ineligible cases. Two of the students had died. Seventeen had apparently moved out of the country. Students were classified here if their last known address was a foreign country and if interviewers had verified that they were not living at any US address supplied by institutions. Interviews were completed with 740 students and partially completed (through section A) with another 3 students to yield a response rate of 77.4% overall. Among the B&B cohort, the net sample of 229 corresponds to a response rate of 76.0%. While this is lower than the targeted figures for the full-scale, projections of production during the field test indicate that, if the field period had been extended, the target response rate would have been achieved.

The average completion time was 47.5 minutes per case. Because of the additional questions administered for the base year of the B&B study, interviews among the B&B cohort

averaged about 10 minutes longer, or 57.46 minutes per case. These figures are consistent with the level of effort budgeted for the full-scale study.

Parent interviews were conducted with a net sample of 406 parents of students. Interviews were completed with 282 and partially completed with an additional five to yield a response rate of 70.7%.

In general, the CATI system performed as expected, although a number of minor problems with question-wording, skip logic, and question positioning were identified and corrected during the field test. The software developed for coding institutions, major field of study, and industry/occupation of student jobs during the interview worked well procedurally. Some errors found in the logic for preloading record abstract data into the CATI system were detected and documented for revisions in the full-scale CATI system.

GRE Component

Several major elements of the GRE assessment option were evaluated: (1) would respondents agree during the interview to register for, and take, the GRE; (2) would the verbal agreement rate change with different cash incentives (allowing cost-efficiency analyses for the full-scale study implementation); (3) would respondents return registration forms; (4) would students who register for the exam actually sit for the exam; and (5) would incentive conditions affect those return rates (again allowing cost-efficiency analyses).

Two incentive levels ($20 and $35) were included in the experiment. In addition a two-step reimbursement payment was initiated for the benefit of cost savings, because the bulk of the payments are not made unless the test is taken, and some individuals could forget or later decide that the reimbursement is not worth the effort. Under the split-payment arrangement, $5 was mailed to the GRE students following the telephone interview, whether they agreed to register for the exam or not, the balance of the incentive was to be mailed to the student following the exam. Under the full payment arrangement, students received the full payment following the examination.

Table 8.9 Completion Status of GRE Experiment

Reimbursement Amount	Total Sampled for GRE Component		Agreed to Take GRE during Interview		Completed Registration Materials		Took GRE Exam	
	%	N	%	N	%	N	%	N
$20 Split Payment	100%	340	61.5%	209	12.9%	44	9.1%	31
$35 Split Payment	100%	296	67.9%	201	11.8%	35	9.8%	29
$20 Full Payment	100%	321	67.6%	217	17.4%	56	11.2%	36
$35 Full Payment	100%	299	63.9%	191	19.7%	59	18.4%	46
TOTAL	100%	1,256	65.1%	818	15.4%	194	11.3%	142

Overall, the results of the GRE component were quite disappointing (Table 8.9). Of

the 1,256 cases selected to be invited to take the GRE, 65.1% agreed to take the exam; only 15.4% completed registration materials, and only 11.3% actually sat for the examination. The amount of payment and payment method appears to have little effect on the initial agreement to sit for the exam. The higher amount did produce a higher percentage of students who completed registration and who actually sat for the exam, but, overall, the percentage at best was less than 20 percent.

8.3 EVALUATION OF DATA COLLECTED IN THE FIELD TEST

8.3.1. Record Abstract Data

Record abstract data were evaluated in three ways. First, following the institution survey, eleven of the 70 participating institutions were asked to verify a limited number of data elements that had been supplied for nine of their students. The purpose was simply to assess the reliability of the record abstract process. Second, data from the record abstract were compared with similar data collected in the CATI interview. Finally, NCES staff compared individual data on Pell grant awards obtained the record abstract with Department of Education records.

Verification of Record Abstract Data with Institutions

In order to conduct a small-scale validation test, eleven institutions were asked to provide detailed information on nine students, providing a total of 99 possible students. This was accomplished by sending these institutions a CADE validation form that asked them to validate the data for nine student records. Responses were returned by institutions on 96 of the 99 students.

Table 8.10 displays the percentage of student records that were updated based on the verification. It should be noted that updates imply only that the date obtained in the initial record abstraction were different from the data obtained in the verification process. The outcome does not necessarily mean that the original data were incorrect, although this is one explanation. Alternatively, information originally recorded may have, in fact, changed in the record system. Table 8.10 indicates a high level of agreement between the initial reports and the validation reports for Pell Grants, Federal College Work-Study Program, and Stafford Loans. The percentage of updates ranges from 1 percent to 2.1 percent. Date of first enrollment was updated in 6.25 percent of the cases.

The largest differences were found on reports of Need Analysis Tuition information where 21 of the 96 student records were updated. The same level of discrepancy between initial and validation records was found for the Expected Family Contribution data. The finding of less accurate reports for these two measures parallels difficulties in collecting accurate data of this type reported in the 1990 NPSAS.

Table 8.10 CADE Validation Results

	Pell Grant		Federal College Work-Study		Stafford Loan		Date First Enrolled		Need Analysis Tuition		Expected Family Contribution	
	N	%	N	%	N	%	N	%	N	%	N	%
Student Report Required Updating	2	2.1%	1	1%	1	1%	6	6.25%	21	21.9%	21	21.9%

Comparison of Record Abstract Data with Student Reports

The results of the NPSAS:93 field test permitted an examination of the degree of correspondence between information about students obtained from the institutional records through the CADE process and information about the students obtained directly from the students in the telephone survey interviews. Because there are data elements common to both sources, it is possible to determine the extent and nature of discrepancies between the two data sources for the common data elements. The variables that can be examined include both financial aid items, and data on individual characteristics such as gender, marital status, and race. The results of this analysis are reported in the full Field Test Report. As expected, agreement was generally higher among demographic items and other individual items than among financial aid items.

Comparison of Record Abstract Data with Administrative Data

Because the student's Social Security number (SSN) was collected as part of this process, it was possible to match individual student records from the NPSAS:93 field test with data from the Department of Education's administrative records on the award of Pell grants. Table 8.11 shows the results. Of the 7,417 usable CADE records of eligible student (see Table 8.7), matches were made to the Department of Education (ED) records for 6,804 students (92%). Of the 1,206 NPSAS records that indicated the student received a Pell Grant, the award was verified with ED data in 1,143 (95%) cases; NPSAS records indicating no grant funds had been received (n = 5,598) were verified in 99% percent of the cases.

Table 8.11 Comparison of Pell Grant Awards in NPSAS Field Test and Department of Education Administrative Records

	NPSAS Record Abstract Data			
	Award was made		No award	
	N	%	N	%
Total	1206	100%	5598	100%
Administrative Data				
Award was made	1143	94.8%	70	1.3%
No Award	63	5.2%	5528	98.7%

8.3.2. Telephone Interview Data

Two approaches were used to evaluate data from telephone interviews. In the first, telephone interview data from the NPSAS:90 cycles were evaluated for inter-item consistency. Because these items are very similar in NPSAS:90 and NPSAS:93, results of this analysis were useful for planning the 1993 full-scale survey. The second approach was an evaluation of data collected in reinterviews with NPSAS:93 field test respondents.

Verification Reinterviews

As part of the evaluation conducted for the NPSAS:93 field test, a reliability experiment was implemented and a subset of the student sample was reinterviewed between one and three months after their initial interview was conducted. Although the reinterview questionnaire contained only a subset of the full field test questionnaire, the same question wordings were used in each of the two interviews. Reinterviews were conducted with 237 students. The full analysis of the results of the original and verification reinterview can be found in full field test report. The results of the first analysis show that, in general, the reliability of financial aid items is low, that is responses from the interview and re-interview did not agree for many students. While there is no clear indication of the source of this low reliability, it is possible that students may not actually be aware of certain pieces of information about their own financial aid status. By including supplemental questions in the full NPSAS, it may be possible to further delineate the source of this lack of correspondence.

Evaluation of Income and Assets in NPSAS:90

In conducting the NPSAS:93 field test, the optimal study design would have included full validation of the data collected. However, neither the time nor the resources available for the NPSAS:93 field test permitted such validation to be conducted. Because of this consideration, it was important that knowledge gained from validation analysis conducted using the NPSAS:90 data be used to guide the formulation of data collection procedures and plans for the NPSAS:93.

Given the limited time available between the NPSAS:90 data collection and the initiation of plans for the NPSAS:93 data collection, it was only possible to conduct a preliminary assessment of the NPSAS:90 data to guide the design of the general characteristics of the NPSAS:93 field test. However, since that time, a more formal report has been prepared that evaluates response rates for several questions in the parent and student surveys, and investigates the consistency between student and parent responses. From this examination, inferences may be drawn about how useful it is to ask particular questions and to combine some questions, and to combine some questions, and whether some questions should only be asked of one respondent.

Respondents seem to have difficulty recalling values over long periods of time. This may be due, in part, to some of the NPSAS questions seeming redundant to respondents who, as a result, refuse to answer similar questions later in the interview. Among students, there is general familiarity with parental income, but students are less likely to know the amount of their parental income.

The use of categorical items as a follow-up to items asking for exact dollar amounts seemed to be successful in reducing the overall levels of item nonresponse. The categorical items obtained much information that may have otherwise been lost and, therefore, were valuable in the survey.

Finally, the consistency of student responses about parental income was similar, if not improved, over that obtained in the NPSAS:87. The correlation found for student categorical responses about their parents' income in the 1987 NPSAS was .72, compared with between .73 and .79 for the 1990 NPSAS.

The implication of these results is that the categorical probes are very useful in this kind of survey. Also, income and asset items can be very sensitive, and perhaps other ways to collect this kind of information should be investigated in order to a obtain more comprehensive picture of student and parent income and assets.

8.4 SUMMARY AND RECOMMENDATIONS

The NPSAS:93 field test provided a great deal of useful information for planning the full-scale survey. Throughout this report, each of the various components of NPSAS:93 field test have been discussed and the results of the evaluation presented. This section discusses the general results of the field test and discusses their implications.

CADE. The CADE system developed for use by institution staff proved to be a viable approach to completing the record abstract portion of the institution survey. Although the self-administered approach to this task was less acceptable than had been hoped, a number of institutions that chose this method were able to complete the record abstract without requiring the time and expense of field data collector visit.

In both the self-administered and field interviewer options, the CADE software performed as required and was found to have several advantages over a paper-and-pencil method. The system contains checks to remind users of the status of work completed for the sample of students, thus providing sample management capability. The system is programmed with automatic checks on acceptable ranges for response and on inter-item consistency, providing a measure of quality control for data entry. While no direct comparisons with a hardcopy version was made in this field test, several of the institution staff who had participated in NPSAS:90 commented during debriefing that the automated system required less time than the paper-and-pencil version and was therefore less of a respondent burden. (Note that 1990 procedures called for field data collectors to abstract the institutions' administrative and financial aid records. The individuals who made these comments in the NPSAS:93 field test were from institutions where staff assisted the NPSAS:90 field data collectors either by completing portions of the record abstract or by abstracting entire records for portions of the student sample.) A major feature of the CADE approach is that data collected at institutions can be quickly loaded into the CATI system for use in the telephone interviews with students and parents. These features of the CADE system and its successful use in the field test are convincing evidence for its use in the full-scale survey.

CATI. Similarly, the CATI system developed for the field test was successfully implemented. Student locating information and data abstracted from institution administrative records were preloaded into to the CATI system and were used as planned during the student and parent interviews. Interviews with both students and parents were completed within the budgeted levels of minutes per case. The addresses and telephone numbers obtained through the institution survey were found to be an effective source of locating information and, if not used directly in contacting respondents, were good "leads" for obtaining additional locating data.

Timing. The length of time necessary for institutions to complete both the list acquisition and the record abstract tasks is problematic for the maintaining the schedule of the full-scale survey. One factor contributing to this problem is that data are available at the institutions on a varying schedule. With the variety of enrollment terms outside of the traditional quarter or semester systems, many institutions are unable to compile enrollment lists that are comprehensive of the period beginning July 1 and ending the following June 30 until very close to the end of this period. Similarly, for the record abstract task, some institutions have not recorded a student's complete financial aid history over this period until quite near the end of the period. This basic problem of the currentness of institutions' records is, of course, exacerbated by the perceived and real burden placed on institution staff by participating in NPSAS. Once the administrative records are complete, the project schedule requires that both the enrollments lists and record abstract data be provided in a very short time frame.

Historical Financial Aid Data. The results of two aspects of the NPSAS:93 field test lead us to urge deleting them from the full-scale study. The first of these is the request to institutions for historical data on financial aid the B&B cohort students. Two factors inhibit

institutions from providing this information. First, financial aid transcripts of students who have transferred into the sampled institution contain only meager data on types and amounts of financial aid. Second, even when these data are theoretically available at the sampled institution for the years of the student's attendance, the records were often stored at off-site locations that made their access very difficult. The problems engendered by these two factors means that any historical financial aid data collected in this manner would be incomplete and poor quality.

GRE component. The poor rate of participation in this component of the study strongly suggests that consideration should be given to other methods of obtaining this sort of information.

8.4.1. Changes Made to the Institution Survey and CADE

Advance materials for the chief administrator of the institution were revised to better describe the urgency of providing the enrollment and graduation files, to urge that this information be provided in a machine-readable form if at all possible, and to explain that enrollment data may be sent in as soon as the enrollment is available for the final term of the NPSAS year. Changes were made that strongly encouraged the administrator to pass the materials on to individuals who are knowledgeable about the institution's systems used to maintain both enrollment and financial aid data. Two copies of the advance materials were mailed to the chief administrator in order to facilitate this request and frequent telephone follow-up calls with these individuals have been planned for the full-scale survey.

The CADE software was revised to delete sections requesting data on financial aid prior to the NPSAS year. Also, the enrollment section of the CADE was revised to simplify recording term-by-term information about enrollment status. Finally, numerous minor changes were made to question wording and explanatory material, following the recommendations of the NPSAS Technical Review Panel.

In addition to revisions to CADE, a new module was added to the project's integrated control system to help the NPSAS staff manage the volume of CADE diskettes necessary in the full-scale study. The CADE Operations Module (CADE-OPS) automates much of the tasks associated with managing the flow of diskettes and files of completed data from the field data collectors and from institutions. In addition, the CADE-OPS contains a program for editing the CADE data prior to loading the student records into the NPSAS CATI system.

Staffing plans for the full-scale survey were modified to enhance the availability of field staff as field data collectors. Training materials for central office staff responsible for initial and follow-up contacts with institution staff were modified to encourage more discussion with institutional coordinators on their use of CADE. The purpose of the more extensive discussion is two-fold. First, it is designed to help NPSAS staff identify any problems with the software so that they may be dealt with efficiently. Second, we hope to quickly identify those institutions that eventually required switching to a field data collector in order to assure the availability of field staff.

8.4.2 Changes Made to the Student and Parent Survey and CATI

Major revisions made to the CATI instrument as a result of the NPSAS:93 field test included deleting the items dealing with specific types of aid awarded prior to the NPSAS year and the section of the CATI that dealt with the GRE component. In addition, although the mechanisms for preloading CADE data into the CATI system worked to a limited extent in the field test, several technical problems were identified during the field test and required additional developmental effort.

In addition to these revisions, the TRP made numerous recommendations which were implemented in the revised CATI instrument.

CHAPTER 9 SUMMARY AND RECOMMENDATIONS

9.1 Overall Design

Overall, the design of the NPSAS is a sound approach to collecting information concerning the wide array of options available to students and their families for financing postsecondary education. There is no single source of information on grants and loans at the federal, state, or institution level and, even if such a source existed, it could capture other types of strategies that families use for postsecondary education. A statistically reliable and methodologically sound national survey is the only option for collecting this valuable information and making it available to policy and educational researchers.

Nonetheless, NPSAS:93 is the third time the study has been fielded and, methodologically, each round represents a new opportunity to improve the basic design. The introduction of computer assisted data entry (CADE) software to the process of abstracting student record data maintained at the institutions is perhaps the most significant methodological aspect of NPSAS:93. Our experience demonstrates that this is not only a feasible approach to abstracting these data; the data collected at the institution can be quickly loaded into the student computer assisted telephone interviewing system to facilitate the administration of the telephone survey of students and parents.

9.2 Sample Design

The NPSAS:93 project staff compared a three-stage and two-stage sample design to determine whether the potential statistical efficiencies of a two-stage design would be cost effective. As summarized in Chapter 2, the cost savings due to geographic clustering in a three-stage design are significant if a great deal of travel is anticipated. In the NPSAS:93, field data collectors were required to travel to about half of the institutions in order to complete the record abstraction tasks. For this reason, the issue of travel costs and geographic clustering remained salient.

However, an important result of NPSAS:93 was the demonstration that many institutions could complete the record abstraction task themselves using the project-developed software. As the usage of personal computers continues to expand, the number of institutions willing to undertake this task may well increase. If this happens, a self-administered NPSAS (at the institution level) could minimize travel costs to a degree that the two-stage sample design should be reconsidered.

9.3 Institution Enlistment

Institution enlistment was the major difficulty in completion of the 1993 NPSAS. This difficulty led to a chronic delay in the project schedule because institutional records collection and student and parent telephone interviews were dependent on completion of the enrollment listing and sampling. This process should begin as soon as possible in the project schedule and consider streamlining the quality control and editing of the individual files received by

the institutions. Further, redesigning CADE and other innovative strategies may help to maintain or perhaps increase institution participation in the study.

9.4 Records Data Collection and Updating

Use of the CADE software by institutional staff as well as by contractor field staff proved quite feasible in NPSAS:93. However, as indicated in our evaluation in Chapter 4, more complete data were obtained by field staff than by institutional staff. This was not an unexpected outcome. Field data collectors working on an assignment are more conscientious than volunteer staff who have competing demands for attention. The tradeoff presented by this situation is that while some information can be obtained accurately and at relatively low cost, the amount of data requested in the NPSAS:93 CADE may have been overwhelming for institution staff. A recommendation is to carefully consider the number of data elements requested in record abstract portion of NPSAS with a goal of deleting a number of data elements to improve participation by the institutions. The essential information for the institutional records collection task is the financial aid award information, periods of enrollment, and the locating information.

9.5 Student and Parent Survey

Student and parent interviews are an essential complement of the record abstract data collected in NPSAS. The NPSAS:93 CATI system had a number of features that should be preserved in the future. In particular, loading information from the student information collected at the institutions proved feasible and resulted in minimizing respondent burden during the telephone interviews. Similarly, interviewing parents and students in either order allowed data from the first interview to be loaded into the second. Presenting data from the first interview for verification in the second, or skipping questions in the second interview if the information was collected in the first, appears to have worked well and, again, further reduced the response burden.

Nonetheless, portions of the NPSAS interview can be tedious. Detailed income and asset questions are difficult for respondents to answer and NPSAS:93 asked for income for two years prior to the survey. Following analyses comparing the results of questions asked about different years, collecting only one year's income data should be considered.

9.6 File Creation and Analysis

NPSAS collects a wealth of information and, in the Data Analysis System (DAS) and Electronic Code Book (ECB), NCES has prepared tools for accessing these data. As a way to simplify these systems, especially the production of the electronic codebook files, NCES may want to consider combining the files of undergraduates and graduates into one file. While for some purposes, it is important to separate these types of students, the DAS software allows separate tables to be developed.

APPENDIX A
NPSAS:93 Data Elements

Most variables listed below as derived variables (beginning about page A-11) are contained in the Data Analysis System available on the Internet at gopher.ed.gov. Other variables shown below include those collected at institutions or telephone interviews. Readers interested in variables not listed as a derived variable, or readers interested in obtaining access to the data files that will permit deriving or creating your own composite variables should contact the

DATA SECURITY OFFICER
STATISTICAL STANDARDS AND METHODOLOGY DIVISION
NCES/OERI - ROOM 408
US DEPARTMENT OF EDUCATION
555 NEW JERSEY AVENUE, NW
WASHINGTON DC 20208-5654
(202) 219-1831

E-Mail address CBARTON@inet.ed.gov

INSTITUTIONAL RECORDS DATA [CADE]

A1	Flag of accuracy of preloaded enrollment terms
A_DFLT	Student loan default/owe grant refund
A_FAMCN	Family contribution
A_PAACSR	(P) annual child support received
A_PAAFDC	(P) annual AFDC/ADC
A_PAASIF	Parent's assets include a farm
A_PABFDB	(P) business/farm debt
A_PABFVL	(P) business/farm value
A_PACASH	(P) cash, savings and checking
A_PADIS	Either parent a dislocated worker
A_PADISP	Either parent a displaced homemaker
A_PAEJST	(P) elementary/jr high/sr. high tuition paid
A_PAEOTI	(P) expected 1992 other taxable income
A_PAEUI	(P) expected 1992 untaxed income
A_PAEXEM	(P) exemptions claimed
A_PAEXTX	(P) expected 1992 tax paid
A_PAFEEI	Father's expected 1992 earned income
A_PAFINC	Father's income earned from work
A_PAGROS	(P) adjusted gross income from IRS form
A_PAHMDB	(P) home debt
A_PAHMVL	(P) home value
A_PAMAR	Parent's marital status
A_PAMDEX	(P) medical/dental expenses
A_PAMEEI	Mother's expected 1992 earned income
A_PAMINC	Mother's income earned from work
A_PANCOL	Number of dependents in college - 1992-93
A_PANFAM	(P) number of family members
A_PAOAGE	Age of older parent
A_PAOINC	(P) other untaxed income
A_PAORDB	(P) other real estate/investment debt
A_PAORVL	(P) other real estate/investment value
A_PASTAT	(P) 1991 tax return status
A_PASTLG	(P) state of legal residence
A_PATAX	(P) U.S. income tax paid
A_PATPCH	(P) tuition paid for how many children
A_PGI	Pell grant index
A_ST41	(S) resources of $4000 or more - A
A_ST42	(S) resources of $4000 or more - B
A_ST91TX	Student 1991 tax return status
A_ST92EI	Student's expected 1992 earned income
A_ST92OI	(S) expected 1992 other taxable income
A_ST92TX	Student's expected 1992 tax paid
A_ST92UI	(S) expected 1992 untaxed income
A_STADC	(S) annual AFDC/ADC
A_STAIF	Student assets include a farm
A_STASR	(S) annual child support received
A_STB69	(S) born before 1/1/69
A_STBFD	(S) business/farm debt
A_STBFV	(S) business/farm value
A_STCIT	(S) citizenship status
A_STCOL	(S) number in college
A_STCSH	(S) cash, savings, and checking
A_STDEAP	(S) monthly DEAP benefits
A_STDISW	Student/spouse a dislocated worker
A_STDSP	(S) dependents other than spouse
A_STE90	(S) parents claim as a exemption in 1990
A_STE91	(S) parents claim as a exemption in 1991
A_STE92	(S) parents claim as a exemption in 1992
A_STEJS	(S) elementary/junior high/senior high tuition
A_STEXM	(S) exemptions claimed
A_STFAM	(S) number of family members
A_STFBD	(S) first Bachelor's degree by 7/1/92
A_STFSA	(S) first year federal aid received
A_STGRS	Student adjusted gross income from IRS form
A_STHMDB	(S) home debt
A_STHMVL	(S) home value
A_STLSTA	Student's state of legal residence
A_STMAR	(S) martial status
A_STMDE	(S) medical/dental expenses
A_STMODP	(S) number of months DEAP benefits received
A_STMOVP	(S) number of months VEAP benefits received
A_STOUT	(S) other untaxed income
A_STOVD	(S) other real estate/investment debt
A_STOVI	(S) other real estate/investment value
A_STOW	(S) orphan or ward of the court
A_STSDH	Student/spouse displaced homemaker
A_STSPEI	(S) spouse's expected 1992 earned income
A_STSPI	(S) spouse's income earned from work
A_STSSB	(S) annual Social Security benefits
A_STSTI	Student income earned from work
A_STTAX	Student U.S. income taxes paid
A_STTCH	(S) tuition paid for how many children
A_STUMRS	(S) unpaid balance on most recent Stafford loan
A_STUSTF	Unpaid balance on Stafford loans
A_STVEAP	(S) monthly VEAP benefits
A_STVUS	(S) veteran of U.S. armed forces
A_STYRC	Year in college in 92-93
B27	Other admission test scores available
B28	Cumulative grade point average (gpa)
B30	Grade point average (gpa) scale
BAB	Baccalaureate and beyond
B_AAPA	From asset analysis-parents' contribution
B_AAST	From asset analysis-student's contribution
B_BACHLR	B.A. or B.S. received by July 1, 1992
B_BORN69	Student born before 1-1-69
B_CITZN	(S) U.S. citizen
B_CNPA	Contribution for student-parent contribution
B_CNST	Contribution for student-student contribution
B_COLYR	Year in college in 92-93
B_DEAPA	(S) DEAP amount expected per month
B_DEAPM	(S) number of months DEAP expected
B_E90	Was student a tax exemption for parents in 1990
B_E91	Was student a tax exemption for parents in 1991
B_E92	Was student a tax exemption for parents in 1992
B_EARN1	Student earnings-summer 1992
B_EARN2	Student earnings-school year 1992-93
B_FEDAID	When did student begin receiving federal aid
B_IAPA	From income analysis-parents' contribution
B_IAST	From income analysis-student's contribution
B_MARST	Student's marital status
B_NIB1	(S) nontaxable income & benefits-summer 1992
B_NIB2	(S) nontaxable income & benifits-1992-93
B_OLDAGE	Age older parent
B_OTHLGL	(S) legal dependents other than spouse

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B_OTI1	(S) other taxable income-summer 1992
B_OTI2	(S) other taxable income-school year 1992-93
B_PADC	Did parent receive AFDC/ADC for 1991
B_PARMAR	Parents' marital status
B_PBFO	(P)amount owed on businesses and/or farm
B_PBFW	(P)present worth of businesses and/or farm
B_PCASH	(P) cash, savings & checking
B_PCHLD	Amount parent received in child support - 1991
B_PDISHM	Was a parent a displaced homemaker
B_PDISWK	Was a parent a dislocated worker
B_PEXMP	(P) 1991 exemptions
B_PFAMSZ	(P) number in family
B_PFARM	Is farm part of business/farm for parent
B_PFWORK	Father income from work - 1991
B_PGI	Pell grant index (PGI)
B_PHOME	(P) home worth
B_PHOPR	(P) home purchase price
B_PHOYR	(P) home purchase year
B_PIRS	(P) 1991 adjusted gross income (IRS)
B_PLTINC	(P) 1992 total expected income and benefits
B_PMED	(P) medical & dental
B_PMWORK	Mother income from work - 1991
B_PNOCOL	(P) number in college
B_POOREI	(P) amount owed on other real estate&investments
B_POTHR	(P) other untaxed income & benifits-1991
B_POWED	(P) home owed
B_PSS	(P) 1991 Social Security benifits
B_PSTRES	Parents' state of residence
B_PSTUIC	(P) elementary/secondary schl tuition
B_PTAX	(P) 1991 U.S. tax figures
B_PTAXPD	(P) 1991 U.S. income tax paid
B_PTUIT	(P) 1991 elementary/secondary school tuition
B_PWOREI	(P) worth of other real estate and investments
B_RES85B	(S) resources $4000 or more in 1985
B_RES86A	(S) resources $4000 or more in 1986 - A
B_RES87A	(S) resources $4000 or more in 1987 - A
B_RES88A	(S) resources $4000 or more in 1988 - A
B_RES89B	(S) resources $4000 or more in 1989 - B
B_RES90A	(S) resources $4000 or more in 1990 - A
B_RES91A	(S) resources $4000 or more in 1991
B_RESDTM	Date of residence (month)
B_RESDTY	Date of residence (year)
B_SADC	(S) AFDC/ADC 1991
B_SBFO	(S) amount owed on businesses and/or farm
B_SBFW	(S) present worth of businesses and/or farm
B_SCASH	(S) cash, savings & checking
B_SCHLD	(S) child support - 1991
B_SDISHM	(S) displaced homemaker
B_SDISWK	(S) dislocated worker
B_SEXMP	(S) exemptions (1991)
B_SFAMSZ	(S) number in family
B_SFARM	(S) farm part of business/farm
B_SHOME	(S) present home worth
B_SIRS	(S) 1991 adjusted gross income (IRS)
B_SMED	(S) medical and dental
B_SNOCOL	(S) number in college
B_SOOREI	(S) other real estate and investments owed
B_SOTHR	(S) other untaxed income & benifits-1991
B_SOWED	(S) home owed
B_SPER1	(S) spouse earnings(summer, 1992)
B_SPER2	Spouse earnings (school year 1992-93)
B_SSS	(S) Social Security benefits 1991
B_SSTRES	Student's state of legal residence
B_STAFUP	Stafford unpaid balance
B_STAX	(S) 1991 U.S. tax figures
B_STAXPD	(S) 1991 U.S. income tax paid
B_STLINC	(S) 1992 total expected income & benefits
B_STUIC	(S) elementry/secondary schl tuition for kids
B_STUIT	(S) elementary/secondary school tuition
B_STWORK	Student income from work(1991)
B_SWOREI	(S) other real estate and investments worth
B_SWWORK	(S) spouse income from work (1991)
B_TITIV	(S) loan default/owe refund
B_VAAMT	(S) other VA benefits amount expected
B_VAMO	(S) number of months other VA benefits expected
B_VEAPA	(S) VEAP amount expected per month
B_VEAPM	(S) number of months VEAP expected
B_VETERN	(S) U.S. veteran
B_WARD	Parents dead or ward of court
CALSYS	Type of calendar system used by school
CASEID	Student identification number
CLOCK	Courses/program measurement
COG_1A	Tuition and fees - primary year
COG_1B	Books and supplies - primary year
COG_1C	Room and board - primary year
COG_1D	Transportation - primary year
COG_1E	Miscellaneous and personal expenses-primary year
COG_1F	Dependent care - primary year
COG_1G	Handicapped care - primary year
COG_1H	Expected family contributions (EFC) primary year
COG_1H1	Parent contributions(dependent S only)primary yr
COG_1H2	Student's contributions from income-primary year
COG_1H3	Student's contributions from assets-primary year
COG_2SUM	Separate budget using CM for summer 1992
COG_3A	Tuition and fees - summer 1992 term
COG_3B	Books and supplies - summer 1992 term
COG_3C	Room and board - summer 1992 term
COG_3D	Transportation - summer 1992 term
COG_3E	Miscellaneous and personal expenses-summer 1992
COG_3F	Dependent care - summer 1992
COG_3G	Handicapped care - summer 1992 term
COG_3H	Expected family contriburions-summer 92
COG_3H1	Parent contributions (dependent Ss only) sum 92
COG_3H2	Student's contributions from income-summer 92
COG_3H3	Student's contributions from assets-summer 92
COG_INS	Institutional budget use CM
COG_PRI	Separate budget using CM for primary year
CONTROL	Proprietary or non-proprietary classification
C_BACHLR	Bachelor's degree
C_BORN69	Date of birth before 1-1-69
C_CITZN	(S) citizenship
C_CNPA	Parents' contribution
C_CNST	Student's contribution
C_CNTL	Total family contribution
C_COLYR	Year in college
C_DEAP	(S) DEAP (Dependent's Educ Assistance Program)
C_DEAPM	(S) DEAP months
C_DEP05	(S) dependent other than spouse age 0-5 1992-93
C_DEP13	(S) depend other than spouse age 13 and older
C_DEP612	(S) dependent other than spouse age 6-12,1992-93
C_FEDAID	(S) First received aid
C_HMPRPR	(S) home purchase price
C_LNDFLT	(S) loan default
C_LSTATE	(S) legal state
C_MARST	(S) marital status
C_OLDAGE	Age of older parent
C_OTHLGL	(S) legal dependants
C_PADC	(P) recieve AFDC or ADC
C_PAGI	(P) adjusted gross income
C_PARINC	Parents in college
C_PARMAR	(P) marital status
C_PCASH	(P) cash, checking and saving account
C_PCLM90	Did parents claim student in 1990
C_PCLM91	Did parents claim student in 1991
C_PCLM92	Did parents claim student in 1992
C_PDEBT	(P) real estate/investment debt
C_PDISHM	(P) dislocated homemaker
C_PDISWK	(P) dislocated worker
C_PEXMP	(P) tax exemptions
C_PFAMSZ	(P) number of family members
C_PFARMD	(P) business and farm debt
C_PFARMV	(P) business and farm value
C_PFWK1	Father earnings - 1991
C_PFWK2	Father earnings - 1992
C_PGI	Pell grant index (PGI)
C_PHLD	(P) child support
C_PHOMED	(P) home debt
C_PHOMEV	(P) home value
C_PINFM	(P) includes farm
C_PMED	(P) medical/dental expenses
C_PMWK1	Mother earnings - 1991
C_PMWK2	Mother earnings - 1992
C_PNOCH	(P) for how many children
C_PNOCOL	(P) total number in college
C_PNOTAX	(P) 1992 nontaxable income
C_POTHR	(P) other untaxed income
C_POTI	(P) other taxable income
C_PSS	(P) Social Security benefits
C_PSTRES	(P) legal state
C_PTAX	(P) tax return filed
C_PTUIT	(P) elementary/secondary tuition
C_PTXPD1	(P) 1991 U.S. income tax paid
C_PTXPD2	(P) 1992 U.S. income tax paid
C_PVALUE	(P) real estate/investments value
C_REFUND	Default/owe refund
C_RES85B	(S) resources of $4000 in 1985 - B
C_RES86B	(S) resources of $4000 in 1986 - B
C_RES87B	(S) resources of $4000 in 1987 - B
C_RES88B	(S) resources of $4000 in 1988 - B
C_RES89B	(S) resources of $4000 in 1989 - B
C_RES90B	(S) resources of $4000 in 1990 - B
C_RUPBL	Recent unpaid balance
C_SADC	(S) AFDC or ADC
C_SCASH	(S) cash, checking and savings account
C_SCHLD	(S) child support
C_SDEBT	(S) real estate/investments debt
C_SDISHM	(S) displaced homemaker
C_SDISWK	(S) dislocated worker
C_SFAMSX	(S) number of family members
C_SFARMD	(S) business and farm debt
C_SFARMV	(S) business and farm value
C_SFWK2	(S) earnings
C_SHOMED	(S) home debt
C_SHOMEV	(S) home value

CADE DATA ELEMENTS

C_SINFM	(S) includes farm
C_SMED	(S) medical/dental expenses
C_SMWK2	(S) spouse earnings
C_SNOCH	(S) for how many children
C_SNOCOL	(S) number in college
C_SNOTAX	(S) nontaxable income
C_SOTHR	(S) other untaxed income
C_SOTI	(S) other taxable income
C_SPWK1	(S) spouse earnings
C_SSS	(S) Social Security benefits
C_STAGI	(S) adjusted gross income
C_STAX	(S) tax return filed
C_STAXP1	(S) 1991 U.S. income tax paid
C_STEXMP	(S) 1991 tax exemptions
C_STUIT	(S) elementary/secondary tuition
C_STWK1	(S) 1991 earnings
C_STXPD2	(S) 1992 U.S. income tax paid
C_SVALUE	(S) real estate/investments value
C_TLUNBL	(S) total unpaid balance
C_VEAP	(S) VEAP amount
C_VEAPM	(S) VEAP months
C_VETERN	(S) veteran
C_WARD	(S) orphan/ward
C_YRHMPR	(S) year home purchased
D3A	Federal Pell Grant Program
D3B	FSEOG (Fed Supplemental Educ Opportunity Grant)
D3C	FWS (Federal Work Study)
D3D	Federal Perkins Loan Program (formerly NDSL)
D3E	Federal Stafford Loan Program (formerly GSL)
D3F	Federal PLUS Loan Program
D3FED	Other aid part of federal scholarships
D3G	Federal SLS Program
D3H	ICL (Income Contingent Loan)
D3I	HEAL (Health Educ Assistance Loan)
D3J	HPSL (Health Professions Student Loan)
D3K	EFN (Health Prof Schol for Exceptional Fin Need)
D3L	FADHPS (Fin Assist for Disadvantaged Health Professions Students)
D3M	NSL (Nursing Student Loan)
D3N	Other federal financial aid
D3ND1	Basis of the other federal award
D3POST	Participate in federal postsecondary programs
D3TYP1	Type of other federal aid
D4A	Vocational rehabilitation
D4B	State work study program
D4C	SSIG (State Student Incentive Grant)
D4D	Other state aid
D4E	Other state aid (second)
D4NEED1	Basis of other state aid
D4NEED2	Basis of other state aid (second)
D4TYP1	Type of other state aid
D4TYP2	Type of other state aid (second)
D5A	Athletic scholarship
D5B	Institution sponsored college work study
D5C	Need-based tuition waivers or discounts
D5D	Non need-based tuition waivers/discounts
D5E	Tuition waivers or discounts
D5F	Other tuition waivers or discounts
D5G	Other institutional aid
D5H	Other institutional aid, second
D5NEED1	Basis of institutional aid award
D5NEED2	Basis of institutional aid award, second
D5TYP1	Type of institutional aid
D5TYP2	Type of institutional aid, second
D6A	The "old" GI bill (chapter 34)
D6B	The Montgomery("new") GI bill (chap 30 and 106)
D6C	VEAP (Veterans' Educ Assistance Program Chap 32)
D6D	Survivors and Dependents Educ Program Chap35
D6E	Vocational rehabilitation
D6F	Health professional scholarship program
D6G	ROTC scholarships
D6H	Student loan repayment program
D6I	Other VA/DOD aid
D6J	Other VA/DOD aid, second
D6NEED1	Basis of VA/DOD award
D6NEED2	Basis of VA/DOD award, second
D6TYP1	Type of VA/DOD aid
D6TYP2	Type of VA/DOD aid, second
D7A	Employer (non-institution) tuition benefit
D7B	National Merit Scholarship
D7C	Outside/private loans
D7D	Other aid
D7E	Other aid, second
D7NEED1	Basis of other award
D7NEED2	Basis of other award, second award
D7TYP1	Type of other aid
D7TYP2	Type of other aid, second
DEP_2SUM	(S) dependency status during the summer 1992
DEP_PRI	(S) dependency status during the primary year
D_CITZN	Citizenship
D_DEFLT	Loan default
D_DEGOBJ	Degree objective
D_DEPST	Dependency status
D_ENSTAT	Enrollment status
D_FAMST	Parent's family status
D_FAMSZ	Parent's family size
D_HEAL	HEAL (Health Educ Assistance Loan)
D_HEPY	HEAL monthly payment
D_HPPY	HPSL monthly payment
D_HPSL	HPSL (Health Professions Student Loan)
D_MARST	Marital status
D_NOCOLL	Parents number of family members in college
D_OLDAGE	Age of older parent
D_OTHER	Student's other educ loans
D_OTHPY	Other monthly payment
D_P12CON	12-month contribution to student
D_P9MCON	9-month contribution to student
D_PAAI	Adjusted available income
D_PADJNT	Adjusted business/farm net worth
D_PAGI	(P) adjusted gross taxable income
D_PAINC	(P) available/discretionary income
D_PAPA	(P) asset protection allowance
D_PCA	(P) contribution from assets
D_PCAAI	(P) contribution from adjusted available income
D_PCASH	(P) cash and bank accounts
D_PCONTR	(P) contribution from income
D_PCP	(P) conversion percentage
D_PDNE	(P) discretionary net worth
D_PEMPAL	(P) employment allowance
D_PERKIN	Perkins Loan
D_PERPY	Perkins Loan monthly payment
D_PETUT	(P) elementary and secondary school tuition paid
D_PFICA	(P) FICA tax
D_PHOME	(P) home equity
D_PINCSP	(P) income supplement
D_PINCTX	(P) U.S. total income
D_PLPY	SLS monthly payment
D_PLUS	SLS (Federal Supplemental Loans for Students)
D_PMDEXP	(P) medical/dental expenses
D_PNETW	(P) net worth
D_POTHR	(P) other real estate and investments equity
D_POTHTX	(P) state and other taxes
D_PSTND	(P) standard maintenance allowance
D_PTLALW	(P) total allowances
D_PTLINC	(P) total income
D_PVIB	(P) untaxed income and benefits
D_REFUND	(S) refund owed
D_SAGI	(S) adjusted gross/taxable income
D_SAINC	(S) available/discretionary income
D_SCON	(S) contribution from income
D_SEMPAL	(S) employment allowance
D_SETUT	(S) elementary and secondary school tuition paid
D_SFICA	(S) FICA tax
D_SINCTX	(S) U.S. income tax
D_SMDEXP	(S) medical/dental expenses
D_SOTHTX	(S) state and other taxes
D_SPOUSE	(S) spouse's loans
D_SPPY	(S) spouse's monthly payment
D_SSTND	(S) standard maintenance allowed
D_SSUMLV	(S) summer living allowance
D_ST12CN	12-month contribution to student
D_ST9CON	9-month contribution to student
D_STAAI	(S) adjusted available income
D_STADJN	(S) adjusted business/farm net worth
D_STAPA	(S) asset protection allowance
D_STCA	(S) contribution from assets
D_STCAAI	(S) contribution from adjusted available income
D_STCASH	(S) cash and bank accounts
D_STCP	(S) conversion percentage
D_STDNW	(S) discretionary net worth
D_STFFSZ	(S) family size
D_STFGSL	Stafford or GSL
D_STGSPY	Stafford monthly payment
D_STHOME	(S) home equity
D_STINCS	(S) income supplement
D_STLALW	(S) total allowances
D_STLINC	(S) total income
D_STNCOL	(S) number in college
D_STNETW	(S) net worth
D_STOTH	(S) other real estate and investments equity
D_STUSP	(S) spouse a student
D_SVIB	(S) untaxed income and benefits
D_TOTAL	(S) totals
D_TOTPY	(S) total monthly payment
D_YRSCH	Year in school
EPC_2SUM	Separate inst budgt & EFC for student sumr '92

CADE DATA ELEMENTS

EPC_PRI	Inst budgt& EFC for student-primary term/year
FFA01	Indicator for Federal Pell Grant Program
FFA02	Indicator for the FSEOG Program
FFA03	Indicator for the FWS Program
FFA04	Indicator for Federal Perkins Loan Program
FFA05	Indicator for Federal Stafford Loan Program
FFA06	Indicator for Federal HEAL Program
FFA07	Indicator for other federal financial programs
INSTID	Institution identification number
INS_1A	Tuition and fees - primary year
INS_1B	Books and supplies - primary year
INS_1C	Room and board - primary year
INS_1D	Transportation - primary year
INS_1E	Miscellaneous and personal expenses-primary year
INS_1F	Dependant care - primary year
INS_1G	Handicapped care - primary year
INS_1H	Expected family contribution (EFC) primary year
INS_1H1	Parent contribution(dependent S only) primary yr
INS_1H2	Student's contribution from income-primary year
INS_1H3	Student's contribution from assets-primary year
INS_3A	Tuition and fees - summer 1992 term
INS_3B	Books and supplies - summer 1992 term
INS_3C	Room and board - summer 1992 term
INS_3D	Transportation - summer 1992 term
INS_3E	Miscellaneous personal expenses - summer 1992
INS_3F	Dependent care - summer 1992 term
INS_3G	Handicapped care - summer 1992 term
INS_3H	Expected family contribution (EFC) summer 1992
INS_3H1	Parent contribution (dependent S only) sum 92
INS_3H2	Student's contribution from income-summer 1992
INS_3H3	Student's contribution from assets-summer 1992
M_C1	Student eligibility flag
M_C10_1	Total tuition and fees, (up to 12 terms)
M_C11	Jurisdiction for tuition purposes
M_C12	Program student enrolled (first term)
M_C13	Program student enrolled (last term)
M_C14	Student level (first term)
M_C15	Student level (last term)
M_C16B	Total length of program/clock or contact hours
M_C16C	Lab and classroom hours required per week
M_C18AM	Graduation date from baccalaureate program-month
M_C18AY	Graduation date from baccalaureate program-yr
M_C3M	Month student first entered sample institution
M_C3Y	Year student first entered sample institution
M_C4	Enrolled during the prior year at this school
M_C5	Enrollment credit or clock hour classification
M_C7A_1	Enrolled in this term, (up to 12 terms)
M_C7E1M	Term of enrollment-ending month(up to 12 months)
M_C7E1Y	Term of enrollment-ending year (up to 12 years)
M_C7S1M	Term of enrollment-start mon#1(up to 12 terms)
M_C7S1Y	Term of enrollment-start year#1(up to 12 terms)
M_C8_1	Student attend status, term 1(up to 12 terms)
M_C9_1	Credits enrolled during term 1(up to 12 terms)
M_D1	Any financial aid for the study year
M_D2	Student apply for any financial aid
M_D3	Any federal aid during the study year
M_D4	Awarded any state aid during the study year
M_D5	Awarded institutional aid during thetudy year
M_D6	Was student awarded VA/Department of Defense Aid
M_D7	Awarded other aid or financial contributions
M_STACT	Student composite ACT score
M_STACTY	In what year did the student take the ACT
M_STDBD	Student's date of birth - day
M_STDBM	Student's date of birth - month
M_STDBY	Student's date of birth - year
M_STGEN	Gender
M_STOATS	Score of the other admission test taken
M_STOATY	Year during which other admission test was taken
M_STSATM	Student's SAT math score
M_STSATV	Student's SAT verbal score
M_STSATY	Year the student took the SAT
M_STTSTO	SAT scores available
M_USED	Finanical aid form primarily used
NOTAPP	Student enrollment indicator
NPPRIME	Separate financial aid awards offered in summer
NPSASID	Student CATI id
PDATE1M	Begin date primary term/year financial aid awards are based (month)
PDATE1Y	Begin date primary term/year financial aid awards are based (year)
PDATE2M	End date primary term/year financial aid awards are based (month)
PDATE2Y	End date for primary term/year financial aid awards are based (year)
PEL_1A	Tuition and fees - primary year
PEL_1B	Allowance for room, board, books, supplies, trans., misc. - primary yr
PEL_1C	Allowance for child care-primary year
PEL_1D	Allowance for handicapped students-primary year
PEL_1E	Pell Grant Index - primary year
PEL_2SUM	Pell budget for student for summer 1992
PEL_3A	Tuition and fees - summer 1992 term
PEL_3B	Allowance for room, board, books, supplies, misc. - summer 1992 term
PEL_3C	Allowance for child care - summer 1992
PEL_3D	Allowance for handicapped students - summer 1992
PEL_3E	Pell Grant Index - summer 1992
PEL_PRI	Pell budget for student in the primary year
Q22A	High school degree or equivalent
Q23A	Race/ethnicity
Q24A	Hispanic origin
Q25A	Citizenship
Q26A	Local residence
Q27A	ACT scores available
S1DATE1	Summer term beginning month - 1992
S1DATE2	Summer term ending month - 1992
STUDTYPE	Student's enrollment classification
S_PAASSB	Annual Social Security benefits
TDAT1EM	Institutional level term number 1 - ending month (up to 12 terms)
TDATE1EY	Institutional level term number 1 - ending year (up to 12 terms)

COMPUTER ASSISTED TELEPHONE INTERVIEW (CATI) ALL STUDENTS

A001	Enrolled in course for credit during NPSAS year
A002	Enrolled for degree or formal award in NPSAS year
A003	Enrolled in program specific occupation, 1992-93
A004	Code ineligible/wrong person/wrong telephone number/other situations
A005	Age of student
A006	Type of high school diploma, GED, certificate, didn't complete h.s.
A007	Student currently enrolled in high school
A008	High school graduation year
A009	Type of high school graduated from (public, private, religious)
A012	Student transfer to sample school during 1992-93
A014	Level in sample school last term of 1992-93
A015	Degree program at sample school
A016	Degree program completed during the NPSAS year
A017	Month awarded degree working towards
A019	Month expected to complete degree program
A020	Number of degrees completed since high school
A026	Sample school-level
A110	Has student ever taken the ACT test
A111	Year first enrolled in postsecondary school
A117	Year awarded degree working towards
A119	Year expected to complete degree
A123	Student attend other postsecondary schools - #1
A126	Other school #1-level
A137	Clock or credit hour basis at sample school
A13a	Sample school-major or program of study
A14A	Year student began graduate program
A1X9	Year after HS first completed postsec course
A210	Score from ACT undergraduate test
A215	Month completed requirements for BA/BS degree
A223	Student attend other postsecondary schools - #2
A226	Other school #2-level
A237	Other school #1-credit hours/clock hours basis
A28c	Sample school-control
A28g	Other school #1-control
A28k	Other school #2-control
A28o	Other school #3-control
A310	Student ever taken the SAT test
A315	Year completed requirement for bachelor's degree
A323	Student attend other postsecondary schools - #3
A326	Other school #3-level
A337	Other school #2-credit hours, clock
A410	Combined SAT score for student
A437	Other school#3-credit hours,clock hours
a510	Has student taken any other undergraduate test
A710	Total score from any other undergraduate test
AA03	Receive BA/BS from sample school in 1992-93
AA20	Number of other degrees, licenses, certifications
AJ12	Month after HS first enrolled in PSE course
AK12	Year after high school first enrolled in PSE
AL01	Type of other degrees/licenses/certificates #1
AL02	Type of other degrees/licenses/certificates #2
AL03	Type of other degrees/licenses/certificates #3
AL04	Type of other degrees/licenses/certificates #4
AL05	Type of other degrees/licenses/certificates #5
AL06	Type of other degrees/licenses/certificates #6
AX11	Month first enrolled in a course PSE
AX12	Student enrolled first postsecondary course

CADE DATA ELEMENTS

	while still in high school
AX13	Student level in school in first term of 92-93
AX16	Cumulative grade point average at sample school
AX18	Main reason for not completing degree at sample
AX97	Estimate of cumulative gpa-scale of 25.0 to 100.0
AX98	Estimate cumulative gpa-scale 1.0 to 10.0
AX99	Estimate cumulative gpa-scale 1.0 to 5.0
AXX9	Month after HS when first completed PSE course
AY01	Year received other degrees/licenses earned #1
AY02	Year received other degrees/licenses earned #2
AY03	Year received other degrees/licenses earned #3
AY04	Year received other degrees/licenses earned #4
AY05	Year received other degrees/licenses earned #5
AY06	Year received other degrees/licenses earned #6
B002	Change major at sample school between
B016	Type of housing student lived in during 1992-93
B017	Amount respondent (or family) paid for housing
B018	Did housing costs include a meal plan
B019	Was school-owned housing on or off campus
B022	Monthly expenses for rent/mortgage and utilities
B023	Average monthly expenses for food
B024	Average monthly expense for transportation costs
B025	Average monthly-personal expenses
B026	Monthly expenses dependent, day care, babysitting
B027	Average monthly expenses repaying educ loans 92-93
B028	Avg. monthly expenses for other expenses
B106	Attend school full time/part time in 1992-93
B107	Number of courses taken between 7/1/92-6/30/93
B108	Number of credits taken during the NPSAS year
B109	Type of system credit hours were based on
B110	Number of hours instruction scheduled weekly
B111	Total tuition and fees for the 92-93
B112	Amount spent on books and supplies in 92-93
B113	Amount spent on other items in 92-93
B114	Amount spent commuting to class in 92-93
B115	Amount spent on other educ expenses for 92-93 year
B2a0	Major at sample school during first term
B2a1	Major at other school #1 attended in 1992-93
B2a2	Major at other school #2 attended in 1992-93
B2a3	Major at other school #3 attended in 1992-93
B2d0	Major at sample school during last term 1992-93
BD01M	Beginning month for term #1 (up to 12 terms)
BD01Y	Beginning year term #1(up to 12 terms)
BM0F	Beginning month of first enrollment
BM0L	Beginning month of last enrollment
BY0F	Beginning year of first enrollment
BY0L	Beginning year of last enrollment
C001	Enrolled in PSE between 7/1/91-6/30/92
C002	Receive financial aid for 1991-1992
C004	Apply for financial aid for 1992-93
C005	Awarded aid from sample inst in 1992-93
C006	Accept aid for 1992-93 year at sample school
C008	Total aid awarded accepted at sample school 92-93
C009	Any aid in grants/scholarships-at sample school
C010	Sample school-total of grants and scholarships
C012	Sample school-amnt of Pell Grant or SEOG
C014	Sample-amount other federal grants or scholarships
C016	Sample-amount state grants or scholarships
C018	Sample-amount of an athletic scholarship
C020	Sample-amount of an academic scholarship
C022	Sample-amount of other school based scholarship
C024	Sample-inst amount of aid from some other source
C026	Tuition and/or fees waived at sample school
C027	Amount tuition/fees were waived at sample school
C028	Awarded aid amt include loans, 92-93 sample schl
C029	Total of loans of 92-93 accepted and awarded aid
C031	Amount from Stafford/Guaranteed Student Loan
C033	Amount from Perkins/National Direct Student Loan
C035	Amount from Supplemental Loan to Student (SLS)
C037	Amount from Health Educ Assistance Loan
C039	Amount of Health Professional Student Loan
C041	Amount of aid awrded from any other federal loan
C043	Amount aid awarded from a state loan
C045	Amount of postsecondary institutional loan
C046	Did you receive loans from other sources
C048	Other loan 1 amount
C050	Accepted aid incl work-study, fellowships, assistantships
C051	Total financial aid received from sources like work-study, fellowships
C052	Any of amount aid award from a college work-study
C054	Amount work-study funded as a federal program
C056	Amount work-study funded as a state-sponsored
C058	Institution Work-study
C060	Amount of loan-unsure of the source
C061	Any fellowships
C063	Amount of fellowship funded by fed government
C065	Amount of fellowship funded by a state government
C067	Amount of institution fellowship
C070	Amount of fellowship funded from another source
C071	Amount from a teaching assistantship
C072	Any aid from a research assistantship
C073	Amount from another assistantship
C075	Did respondent receive veterans benefits
C076	How much were veterans benefits respondent
C077	Number of months student received VA benefits
C078	Student receive aid from VEAP
C079	How much were these benefits (VEAP)
C080	Number of months respondent received VEAP
C081	Confirm respondent did not receive financial aid
C082	Amount received a church/ religious organization
C084	Amount received from a community organization
C086	Amount received from civic/professional org
C088	Amount of aid from a National Merit Scholarship
C089	Amount of aid received from any other source
C091	Amount of aid received from other outside source
C111	Through 6/30/93, amount borrowed for educ
C112	How much still owed is/was in federal loans
C114	Through 6/30/93, amt borrowed graduate/ first-profess educ
C116	Of the amount borrowed, how much still owed
C118	Amount respondent owes in federal loans
c20a	Why not apply for aid-family/student could pay
c20b	Why not apply for aid, didn't want to go in debt
c20c	Why did not apply for aid, income too high
c20d	Why did not apply for aid, grades/scores too low
c20e	Why did not apply for aid-too hard to apply for aid
c20f	Why no apply for aid-not want to disclose finance
c20g	Why did not apply for aid-ineligible part-time
c20h	Why did not apply for aid-no money available
c20i	Why no apply for aid-missed application date
c20j	Why did not apply for aid-any other why
C248	Other loan #2 amount from other source
C348	Other loan #3 amount from other source
C448	Other loan #4 amount from other source
CC05	Awarded financial aid-other schools for 92-93
CC06	Accept aid for 92-93 at other schools
CC08	Total aid awarded and accepted at other schools
CC09	Any grant aid at other schools attended
CC10	Other schools-total amount of grants/scholarships
CC12	Other school-amount of a Pell Grant or SEOG
CC14	Others-amn funded by other federal grants
CC16	Others-amount funded by state government grants
CC18	Other schools-amount of an athletic scholarship
CC20	Other schools-amount of an academic scholarship
CC22	Other school-amount of other inst scholarship
CC24	Other schools-aid amount from some other source
CC26	Tuition/fees waived at other schools in 92-93
CC27	Tuition/fees were waived at other schools in 92-93
CC28	Other school-amount any from loans in 92-93 yr
CC29	Other-how much was the total amount of these loans
CC31	Other-aid awrded from a Stafford/guaranteed loan
CC33	Other-aid from a Perkins/national direct loan
CC35	Other-aid from a Supplemental Loan to Students
CC37	Other-aid awarded from a HEAL loan
CC39	Other-aid awarded from a HPSL loan
CC41	Other-aid awarded from any other federal loan
CC43	Other-aid awarded from a state loan
CC45	Other-aid awarded from a an institution loan
CC46	Other schools-receive loans from other sources
CC50	Other-financial assistance?
CC51	Other-total financial assistancefrom these sources
CC52	Other-of the amount awarded any from work-study
CC54	Other schools-Amt of loan work-study from fed pgrm
CC56	Other schools-Amt the work-study funded as state
CC58	Other schools-Amt work-study fm inst sponsored pgm
CC60	Other schools-Amt unsure of the work-study funding
CC61	Other schools-was any of the aid from a fellowship
CC63	Other-Amt fellowship funded by federal government
CC65	Other-Amt fellowship funded by a state government
CC67	Other-Amount fellowship funded by institution
CC70	Other schools-fellowship amt from other source
CC71	Other-amount of aid from a teaching assistantship
CC72	Other-amount of aid from a research assistantship
CC73	Other-amount of aid from another assistantship
CC75	In 1992-93 get veterans benefits-other schools
CC76	Amount of veterans benefits-other schools
CC77	Number of months got veterans benefits-other schls
CC78	In 1992-93 receive aid from VEAP-other schls
CC79	Amount of VEAP benefits-other schools
CC80	Number of months VEAP benefits-other schls
CC81	Confirm S did not get aid for 92-93-other schls
CC82	Amount aid from a church or religious group

CATI Data Elements

CC84	Amount from a community group other schools
CC86	Amount from civic/fraternal/prof. groups
CC88	Amount from a National Merit Scholarship-other sch
CC89	Amount from any other source-other schools
CC91	Amount from other source-other schools
CX18	S in default on a federal student loan/grant
CX52	Amount of college work-study awarded
CX61	Amount received from fellowships in 1992-93
CX80	You got x amount of aid in 92-93,is that right?
CX82	S receive aid from other sources, i.e., employer
CX89	Respondent receive aid from veterans benefits
CX91	Amt received from employer (tuition reimbursement)
CY52	Other schools-amount of aid for work-study
CY61	Other schs-total amount of fellowships for 1992-93
CY80	Other schools-confirm amt of aid received in 92-93
CY82	Other schools-receive aid through other sources
CY89	Other schools-amount from veterans benefits
CY91	Other schools-Amount aid received from an employer
D001	S's marital status between 7/1/92 and 6/30/93
D002	Funds used for 1992-93, amt from personal savings
D006	Parents' marital status
D008	Which parent is deceased
D011	Does respondent have any legal guardians
D012	Type of guardian (male, female, two guardians)
D013	Parent student lives with when not in school
D015	Parent providing S most financial support
D016	Who provided most support when last supported by parent or guardian
D017	Amount of parental contributions for 1992-93
D018	Amount received from parents as loans for 1992-93
D019	Have parents contributed/loaned money for 92-93
D020	Amount mother contributed toward 1992-93
D021	Amount received from mother for 1992-93 expenses
D023	Parents provide additional support in 1992-93
D024	Est amt of parent help with other forms of support
D033	Student or parents use a college prepayment plan
D034	Sponsor of tuition prepayment plan
D035	Use U.S. savings bonds for 92-93 expense
D036	Other relatives/friends contribute to expenses
D037	Amount received in loans from other relatives
D120	Amount father contributed toward 1992-93 expenses
D121	Amt in loans recd from father for 92-93 expenses
d25b	Parents provide respondent with meals
d25c	Parents provide respondent with clothing
d25d	Parents provide respondent with charge cards
d25e	Parents provide help with automobile loan payments
d25f	Parents provide help with auto repair bills
d25g	Parents provide help with any type of insurance
d25h	Parents provide any other type of assistance
d25z	Parents provide respondent with housing
DX23	Amt of additional parental help with other items
DX34	Take out 2nd mortgage, refinance any real estate
E001	S employed between July 1, 1992 and June 30, 1993
E003	What kind of company was student's employer
E005	In what month did the job start
E006	In what month did the job end
E007	Number of hours per week respondent worked at job
E009	Was job offered through college work-study
E010	Job related to current major
E011	Job on or off campus
E012	Number of other jobs held during 1992-93
E013	Total income from all jobs in 1992-1993
E01Y	If not working in 92-93, availability for emplymnt
E03A	How closely job related to major/area study
E05a	In what year did job start
E06a	In what year did the job end
E10C	Occupation coding-SOC coding
E1a	Perticipate in apprenticeship program in 92-93
E1b	Participate in cooperative educ program in 92-93
E1c	Participate in internship/practicum pgm in 92-93
E1IC	Industry coding
ED01M	Ending month for enrollment term #1
ED01Y	Ending year for enrollment term #1
ED02M	Ending month for enrollment term #2
ED02Y	Ending year for enrollment term #2
ED03M	Ending month for enrollment term #3
ED03Y	Ending year for enrollment term #3
ED04M	Ending month for enrollment term #4
ED04Y	Ending year for enrollment term #4
ED05M	Ending month for enrollment term #5
ED05Y	Ending year for enrollment term #5
ED06M	Ending month for enrollment term #6
ED06Y	Ending year for enrollment term #6
ED07M	Ending month for enrollment term #7
ED07Y	Ending year for enrollment term #7
ED08M	Ending month for enrollment term #8
ED08Y	Ending year for enrollment term #8
ED09M	Ending month for enrollment term #9
ED09Y	Ending year for enrollment term #9
ED10M	Ending month for enrollment term #10
ED10Y	Ending year for enrollment term #10
ED11M	Ending month for enrollment term #11
ED11Y	Ending year for enrollment term #11
ED12M	Ending month for enrollment term #12
ED12Y	Ending year for enrollment term #12
EJ12	Average # hours a week working while enrolled
EM0F	Ending month of first enrollment
EM0L	Ending month of last enrollment
EXX1	Work for pay between 1/1/1992 and 6/30/93
EY0F	Ending year of first enrollment
EY0L	Ending year of last enrollment
F010	Satisfied with security measures taken for safety (non-B&B only)
F047	Highest level of educ expected at sample school
F048	Highest level of educ S ever expects to complete
F049	Plans enrolled/employed/both-during next 12 mnths
F10A	How often concerned for safety at sample school
f19a	S taken/plan to take Graduate Record Exam(GRE)
f19b	S taken/plan to take National Teacher's Exam (NTE)
f19c	S taken/plan to take Miller's Analogy Test (MAT)
f19d	S taken/plan to take Dental Admissions Test
f19e	S taken/plan to take GMAT
f19f	S taken/plan to take the LSAT
f19g	S taken/plan to take the MCAT
f19h	S taken or plan to take State Teacher Exam
f19i	S taken or plan to take any other tests
f20a-j	In what month/year(did you/do you plan to)take GRE,NTE,DAT,GMAT,LSAT,STE
f21a-j	Total composite score each test mentioned
FX19	Taken or plan to take any graduate school admissions tests
FX49	View self as FT/PT worker and/or FT/PT student
G001	Sex of the respondent
G002	Race of the respondent
G003	Is respondent of Hispanic origin
G004	Type of Hispanic descent of respondent
G005	Type of Asian or Pacific Islander descent
G007	Is respondent a United States citizen
G008	As noncitizen, is S eligible for federal aid
G009	Language spoken most often at home when growing up
G010	In what country was respondent born
G011	State of legal residence (student)
G012	On active U.S. military duty or in the reserves
G013	Veteran of the U.S. military
G014	In which branch of military does respondent serve
G015	Active duty or reserves military status
G023	Respondent registered to vote in the U.S.
G024	Respondent ever voted in any election
G025	Voted in 1992 presidential election
G026	S ever do volunteer or community service work
G027	Perform any community service in NPSAS year
G028	Community service required by any of S's classes
G029	Hours per week of community service during 1992-93
G030	Community service related to S's future career
G035	In next 12 months, plan to volunteer?
g16a	Have hearing impairment disability
g16b	Have a speech disability or limitation
g16c	Have an orthopedic or mobility limitation
g16d	Have a specific learning disability
g16e	Have a vision impairment or legally blind
g16f	Have any other type of disability
g16z	Have any of following disabilities/no disabilities
H004	Highest level of educ S's father completed
H010	Referent parent's state of legal residence
H012	Number of people parents supported during 1992-93
H03A	Age of respondent's father/male guardian
H03B	Age of respondent's mother/female guardian
H04B	Highest level of educ S's mother completed
H10B	Non-referent parent's state of legal residence
H11A	1992 referent parent's total yearly income
H11B	Non-referent parent's total yearly income for 1992
H12B	Number of people supported by non-ref parent 92-93
H14A	Of number supported by parents, # in school ref
H14B	Of people supported by parent, # in school in 92-93 - non referent parent
H14T	Of people supported by parents, # in schl in 92-93 - new answer
H14W	Of people supprtd by non-ref parent,number in school in 92-93-new answer
H36D	1991 referent parent's total yearly income
H36M	1991 non-referent parent's total yearly income
H37D	Referent parent's 91 yearly income-$30,000?
H37M	Non-referent parent's 91 yearly income-$30,000?

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H38D	Referent parent's 1991 yearly income-$30,000?
H38M	Non-referent parent's 1991 yearly income-$30,000?
H39D	Referent parent's 1991 yearly income- < $30K?
H39M	Non-referent parent's 1991 yearly income-<$30K?
HF2A	Father earn an Associate's degree
HM3A	Mother earn an Associate's degree
HX11	Referent parent's 1992 income-> or < $30,000?
HX12	Referent parent's 1992 income-> $30,000?
HX13	Referent parent's 1992 yearly income-$30,000?
HX1B	Non-referent parent's 1992 income-> or < $30K?
HX2B	Non-referent parent's 1992 income > or <$30k
HX3B	Non-referent parent's 1992 income-> $30,000
I003	Is respondent a ward of the court
I004	Legal dependents other than self
I005	Referent parent claim S as a tax exemption in 1990
I007	Beginning in 1987-88, year first got federal aid
I008	Total annual resources of $4000 or more in 1985
I010	Number of people respondent supported in 1992-93
I012	Number of dependents in college in 1992-93
I014	Number of children in private school 1992-93
I016	Amount of tuition per year for private schooling
I053	Estimate of S's 1991 total income from all jobs
I054	1991 total job income-more or less than $30,000
I05A	Referent parent claim S as a tax exemption in 1991
I05B	Referent parent claim S as a tax exemption in 1992
I05F	Non-referent parent claim S as a tax exemptn in 90
I05G	Non-referent parent claim S as a tax exemptn in 91
I05H	Non-referent parent claim S as a tax exemptn in 92
I060	Spouse's 1991 income from all jobs
I064	S's 1991 income, from all sources, prior to taxes
I065	Est 91 inc from all sources-more or less than $30k
I067	Receive any Social Security in 1991
I08A	Total annual resources of $4000 or more in 1986
I08B	Total annual resources of $4000 or more in 1987
I08C	Total annual resources of $4000 or more in 1988
I08D	Total annual resources of $4000 or more in 1989
I08E	Total annual resources of $4000 or more in 1990
I08F	Total annual resources of $4000 or more in 1991
I400	Receive any AFDC or ADC in 1991
I401	Receive child support in 1991
I402	Receive any other untaxed income in 1991
I500	Receive any AFDC or ADC in 1992
I501	Receive child support in 1992
I502	Receive any other untaxed income or benefits in 92
I504	Estimate current value of cash,checking accounts
I505	Estimate of current value of home
I506	Estimate of the amount currently owed on home
I507	Estimate current value of other real estate
I508	Estimate amt currently owed on real estate
I509	Estimate current value of business, including farm
I510	Estimate amt currently owed business, incl farms
I513	Current worth retirement and/or pension accounts
I514	Est worth of retirement and/or pension accounts
IP53	Total job income in 1992
IP54	Estimate of 1992 job income-more or less than $30K
IP60	Spouse's total job income in 1992
IP64	Total 1992 income, all sources, prior to taxes
IP65	Estimate 1992 income,all sources-> or < $30K?
IP67	Receive any Social Security in 1992
IP69	Current worth cash,savings and checking accounts
IP70	Current worth of S's (and spouse's) home
IP71	Amount currently owed on value of S's home
IP72	Current worth of other real estate and investments
IP73	Amount owed on other real estate and investments
IP74	Current total worth of business, including farms
IP75	Amount currently owed on businesses or farms
IX10	How many of these dependents are yourself (S)
IX11	How many of these dependents are S's parents
IX12	How many dependents are less than 6 years old
IX13	How many dependents are between 6-13 years old
IX14	How many dependents are more than 13 years old
IX15	Was S's spouse enrolled in college 7/1/92-6/30/93
IX54	Est of 91 job income-groupings more than $30,000
IX55	Est of 91 job income-groupings less than $30,000
IX56	Student or S's parents get food stamps since 1/91
IX57	Who received the food stamps in 1991
IX61	Est spouse's 91 job income-more or less than $30K
IX62	Est of spouse's 91 income-groupings more than $30K
IX63	Est of spouse's 91 income-groupings less than $30K
IX65	Est of 91 total income-groupings more than $30,000
IX66	Est 1991 income, from all sources-less than $30K
IY54	Est 1992 job income-groupings more than $30,000
IY55	Est 1992 job income-groupings less than $30,000
IY56	Student or S's parents get food stamps since 1/92
IY57	Who received the food stamps in 1992
IY61	Est spouse's 92 job income-more or less than $30K
IY62	Est spouse's 92 job income-more than $30K
IY63	Est spouse's 92 job income-less than $30K
IY65	Est 92 total income-groupings more than $30,000
IY66	Est of 92 total income-groupings less than $30,000
J008	Consider graduation rate to attend sample school
J009	Consider campus crime rate-deciding to attend
J010	Consider job placement rate in deciding to attend
J11A	Remedial help to improve reading skills in 1992-93
J11B	Receive remedial help in writing during 1992-93
J11C	Receive remedial help in mathematics in 92-93
J11D	Receive remedial help for study skills in 1992-93
J12A	Number of hours remedial help to improve reading
J12B	Number of hours remedial help to improve writing
J12C	Number hours remedial help to improve mathematics
J12D	Number hours of help to improve study skills
JX10	Ever taken remedial instruction since began PSE
NEN0	Number of enrollments
NP93ID	Computed NPSAS identifier
SF01-12	School index for enrollment #1 thru #10-12

ALL STUDENTS - VERBATIM ITEMS

A138	Sample school-specify other type of system
A13b	Sample school-major or program of study-verbatim
A238	Other school #1-specify other type of system
A338	Other school #2-specify other type of system
A438	Other school #3-specify other type of system
A610	Name of other undergraduate test-verbatim
AI00	Sample school IPEDS code
AI01	Other school #1-IPEDS code
AI02	Other school #2-IPEDS code
AI03	Other school #3-IPEDS code
AJ13	Specify other undergrad program, 1st term text
AJ14	Specify other undergrad program, last term text
AJ15	Specify other undergraduate program-sample school
AJ18	Other reason for not completing degree
AK13	Specify other grad pgm, first term-verbatim text
AK14	Specify other grad pgm, last term-verbatim text
AK15	Specify other graduate program-sample school
AX87	Estimate major GPA-other scale
AX96	Estimate cumulative GPA-other scale
B16a	Other type of housing used by student in 1992-93
B2b0	Text of major at sample school for 1st term
B2b1	Verbatim text of major at other school #1 attended
B2b2	Verbatim text of major at other school #2 attended
B2b3	Verbatim text of major at other school #3 attended
B2e0	Verbatim of major at sample school in last term
C047	Specify other loan 1 name from sources other than Federal,State,Inst.
C069	Name of the other source for fellowship
C090	Name of other outside source from which respondent received aid
C247	Other loan#2 name source other than Fed,St,Inst
C347	Other loan#3 name source other than Fed,St,Inst
C447	Other loan #4 name source other than Fed,St,Inst
C47b	Other loan name #2-other schools that are not from Federal,State,Inst
C47c	Other loan name #3-other schools that are not from Federal,State,Inst
C47d	Other loan #4-other schls other than Fed,St,Inst
C48b	Other loan #2-other schls other than Federal,State,Instit
C48c	Other loan amount #3-other schools
C48d	Other loan amount #4-other schools
CC47	Other loan name #1-other schools
CC48	Other loan amount #2-other schools
CC69	Other schls-name of the fellowship funded by other
CC90	Name of the other source of aid-other schools
CQ2s	What other reasons for not accepting aid-verbatim
D134	Sponsor of prepayment plan-other specify verbatim
D25a	Other types of assistance by parents-verbatim
E004	Important activities and duties at the S's job
E1OT	Occupation verbatim text
E1IT	Industry verbatim text for student
EJ15	Other thing student did to find job-verbatim
F219	Other graduate and professional tests taken-text
F286	Find future job-other specify verbatim response
F389	Level certified/eligible to teach-othr specify
F488	Fields are you certified/eligible to teach-other verbatim response
F80b	Major at graduate school-verbatim text
G102	S other race-verbatim
G104	Other Hispanic origin-verbatim
G105	Other Asian/Pacific Islander descent-verbatim
G109	Other language spoken most often in S's home-text
L034	Other source of support-verbatim
L075	Other type of ln recvd by parents for S's educ
L38b	Other sponsor of the tuition prepaymt plan-text

N002	Occupation verbatim text-parent respondent
N003	Industry verbatim text-parent respondent
NP93ID	Computed NPSAS identifier
NY02	Occupation of spouse - verbatim text
NY03	Industry spouse-verbatim text
P1sp	Other race of parent-verbatim text
P3sp	Other type of Hispanic descent-verbatim
P4sp	Other type of Asian/Pacific Islander-verbatim
Q2s	Didn't apply for aid-some other reason verbatim
Q2ss	Any other reason for not applying for aid-verbatim
R7s	Assist in selecting school-other verbatim
R9s	Help in job search-other verbatim text

B&B STUDENTS

AX17	Major GPA at sample school
AX88	Estimate major GPA-scale of 25.0 to 100.0
AX89	Estimate major GPA-scale of 1.0 to 10.0
AX90	Estimate of major GPA-scale of 1.0 to 4.0
B029	Attend other school #1 prior to 7/1/92
B30A	Other school #1-IPEDS code-prior 7/1/92
B30B	Other school #1-level-prior to 7/1/92
B30C	Other school #2-IPEDS code-prior 7/1/92
B30D	Other school #2-level-prior to 7/1/92
B30E	Other school #3-IPEDS code-prior to 7/1/92
B30F	Other school #3-level-prior to 7/1/92
B30G	Other school #4-IPEDS code-prior to 7/1/92
B30H	Other school #4-level-prior to 7/1/92
B30I	Other school #5-IPEDS code-prior to 7/1/92
B30J	Other school #5-level-prior to 7/1/92
B32C	Other school #1-control-prior to 7/1/92
B32G	Other school #2-control-prior to 7/1/92
B32K	Other school #3-control-prior to 7/1/92
B32O	Other school #4-control-prior to 7/1/92
B32S	Other school #5-control-prior to 7/1/92
BA29	Attend other school #2 prior to 7/1/92
BB29	Attend other school #3 prior to 7/1/92
BC29	Attend other school #4 prior to 7/1/92
BD29	Attend other school #5 prior to 7/1/92
C093	Respondent receive any financial aid for educ prior to 7/1/92
C096	Receive grants, schlrshps, fllwshps, tuit. waiver before 7/1/92
C100	Respondent receive aid from other sources prior to 7/1/92
CX92	Respondent receive financial aid for educ prior to 7/1/92
E14A	To find a job-sent out resumes
E14B	To find a job-went to campus job placement
E14C	To find a job-looked through want ads
E14D	To find a job-asked friends
E14E	To find a job-asked family
E14F	To find a job-asked professors
E14G	To find a job-attended recruiting fairs
E14H	To find a job-did volunteer work in field
E14I	To find job-looked at unemployment office
E14J	To find job-used employment agcy/prof recruiters
E14K	To find a job-placed a want ad
E14L	To find a job-subscribed to trade journals
E14M	To find a job-did nothing
E14N	To find a job-other
EX14	Attempted to change/obtain job since graduating
F01A	Satisfied with the ability of instructors
F01B	Satisfied with classroom buildings, library, equip
F01C	Satisfied with intellectual life of the school
F01D	Satisfied with the course curriculum
F01E	Satisfied with social life of the school
F01F	Satisfied with his/her intellectual growth
F01G	Satisfied with educ, considering overall cost
F01H	Satisfied with reputation of school
F01I	Satisfied with security measures taken (B&B only)
F050	Program type expected or enrolled in 1993-94
F053	Year S first contacted grad school for admission
F055	Month first applied to grad/professional school
F056	Number of graduate/professional schools applied to
F059	Admission acceptance at first choice grad school
F061	Attending graduate/professional school #1
F062	Month start to attend grad/professional school #1
F063	Applied for aid grad/professional schl #1
F064	Awarded/offered aid at grad /prof school #1
F067	Admission acceptance at 2nd choice grad school
F069	Attended graduate/professional school #2
F070	Month start to attend grad/professional schl #2
F071	Applied for aid at grad/professional school #2
F072	Awarded/offered financial aid at grad/prof schl #2
F073	Number of grad/prof schools accepted at
F074	Plan to attend other grad or professional school
F077	Month will start/started at grad/professional schl
F078	Applied for aid at other grad /professional schl
F079	Awarded/offered aid at other grad/prof school
F083	Next 12 months, plan to work full or part time
F084	Expect job to relate to program in next 12 mnths
F085	Does respondent have a firm job offer
F087	S has a teaching certificate or eligible to teach
F090	Expect to teach during 1993-94 academic year
F091	Number of applications for teaching positions
F093	Respondent offered a teaching position
F094	Respondent accepted a teaching position
F11A	Ever used the personal counseling services
F11B	Ever used the academic counseling services
F11C	Used the financial aid counseling services
F11D	Ever used career or job counseling services
F11E	Ever used job placement services at sample school
F11F	Ever used cultural, music, art or drama facilities
F11G	Ever used sports and recreation facilities
F124	Plan to marry or live as married in next 12 months
F125	Plan to have or adopt children in next 12 months
F12A	Satisfied with personal counseling service
F12B	Satisfied with academic counseling service
F12C	Satisfied with financial aid counseling service
F12D	Satisfied with career or job counseling services
F12E	Satisfied with the job placement services
F12F	Satisfied with cultural, music, drama facilities
F12G	Satisfied with the sports recreation facilities
F13A	Used personal counseling services, 1992-93
F13B	Used academic counseling services, 1992-3, at
F13C	Used financial aid counseling services, 1992-93
F13D	Used career or job counseling services, 1992-93
F13E	Used job placement services during 1992-93
F13F	Used cultural, art, drama facilities, 1992-93
F13G	Used sports or recreation facilities, 1992-93
F255	Year first applied to a graduate/professional
F262	Year start to attend graduate/professional schl #1
F270	Year start to attend graduate/professional schl #2
F277	Year start to attend other graduate school
F57L	Level of graduate/professional school #1
F58C	Control of graduate/professional school #1
F65L	Level of graduate/professional school #2
F66C	Control of graduate/professional school #2
F75L	Level of grad/prof. school student attending
F76C	Control of grad/prof. school student attending
F80A	Major at graduate school-CIP field of study coding
F81A	Shorter time period to finish the course
F81B	Obtained financial aid needed at school
F81C	Better chance of getting job at the school
F81D	Costs other than tuition are less
F81E	Tuition costs are less
F81F	Some other cost reason
F81G	Particular professor teaches there
F81H	Friends or spouse attend this school
F81I	Parents/guardians attended this school
F81J	Parents/guardians wanted me to attend
F81K	Other influence related reason
F81L	Can work while attending school
F81M	Can live at home
F81N	Located where I want to settle
F81O	Close to home
F81P	Far away from home
F81Q	Some other location reason
F81R	Like campus surroundings
F81S	Has good reputation
F81T	Research conducted is of interest
F81U	Lab facilities and equipment are excellent
F81V	Offers course of study wanted
F81W	Good reputation for placing graduates
F81X	Other reputation related reason
F82A	Degree necessary to obtain career goal
F82B	Undecided about career
F82C	Expand knowledge in field of study
F82D	Family wanted me to attend
F82E	Other person's encouragement
F82F	Enjoy school, want to continue
F82G	Easier to attend now, than later
F82H	Parents would help pay
F82I	Some other reason
F86A	Find future job/sent out resumes
F86B	Find job/went to campus job placement offices
F86C	Find job/looked through want ads
F86D	Find job/networked w/ family, friends, others
F86E	Find job/looked through interviews
F86F	Find job/attended recruiting fairs
F86G	Find job/did volunteer/internship work in field
F86H	Find job/job announcements-unemployment office
F86I	Find job/employment agency, prof. recruiters
F86J	Find job/placed a want ad
F86K	Find job/subscribed to trade journals

F86L	Find job/did nothing
F86M	Find job/other (specify)
F89A	Levels certified/eligible to teach-preschool
F89B	Levels certified/eligible to teach-kindergarten
F89C	Levels certified/eligible to teach-first grade
F89D	Levels certified/eligible to teach-second grade
F89E	Levels certified/eligible to teach-third grade
F89F	Levels certified/eligible to teach-fourth grade
F89G	Levels certified/eligible to teach-fifth grade
F89H	Levels certified/eligible to teach-sixth grade
F89I	Levels certified/eligible to teach-seventh grade
F89J	Levels certified/eligible to teach-eighth grade
F89K	Levels certified/eligible to teach-ninth grade
F89L	Levels certified/eligible to teach-tenth grade
F89M	Levels certified/eligible to teach-eleventh grade
F89N	Levels certified/eligible to teach-twelfth grade
F89O	Levels certified/eligible to teach-special educ
F89P	Levels certified/eligible to teach-bilingual
F89Q	Levels certified/eligible to teach-administrative
F89R	Levels certified/eligible to teach-counseling
F89S	Levels certified/eligible to teach-other specify
F96A	Decide to work-did not want additional educ debt
F96B	Decide to work-support family/pay fin obligation
F96C	Decide to work-didn't receive financial aid
F96D	Decide to work-personal reasons other than money
F96E	Decide to work-failed to meet application deadline
F96F	Decide to work factor-not admitd to schl of choice
F96G	Decide to work factor-want break from school
F96H	Decide to work-good job opp. / military commitment
F96I	Factor for work-career plans indefinite
F96J	Decide to work-need work expernce before grad schl
F96K	Decide to work factor-some other reason
F97A	Factor for future work-previous experience in area
F97B	Factor for future work-good income to start
F97C	Factor for future work-good income potential
F97D	Factor for future work-job security
F97E	Factor for future work-prestige and status
F97F	Factor for future work-interesting work
F97G	Factor for future work-intellectually challenging
F97H	Factor for future work-freedom to make decisions
F97I	Factor for future work-interaction with people
F97J	Factor for future work-work independent of others
F97K	Factor for future work-allows great deal of travel
F97L	Factor for future work-allows establishment roots
F97M	Factor for future work-time for non-work activity
FI57	First choice grad/first-prof school-IPEDS code
FI65	Second choice grad/first-prof school-IPEDS code
FI75	Other choice grad/first-prof school-IPEDS code
FX86	Is respondent looking for work
G034	Hours of comm. service/volunteer work past 2 years
G97A	Important or not-becoming authority in field
G97B	Important or not-influencing political structure
G97C	Important or not-being very well-off financially
G97D	Important or not-owning own business
G97E	Important or not-being successful in line of work
G97F	Important or not-being able to find steady work
G97G	Important or not-being a leader in the community
G97H	Important/not-living close to parents & relatives
G97I	Important or not-getting away from area grew up
G97J	Important/not not-have leisure time for interests
G97K	Important or not-having children
G97L	Important or not-giving kids better opportunity
PBM1	Other school #1-month/year of first enrollment (up to 5 schools)
PEM1	Other school #1-month/year of last enrollment (up to 5 schools)
U88A	Fields certified/eligible to teach

PARENT INTERVIEWS

ICD2	Industry code-spouse
ICDE	Industry code-parent respondent
L001	Marital status of parent respondent
L004	Amount P contributed to students school expenses
L005	Other relatives, friends, family contrib.
L006	Amt contributed by other relatives, friends
L007	Amount loaned by parents to S for school expenses
L009	Provide S with addtnl help, other than money
L010	Amt of addtl support provided, other than money
L037	Parent use tuition prepayment plan
L038	Sponsor of the tuition prepayment plan used
L039	Parent particip. in U.S. savings bond program
L041	Grade of S when parents started saving for schl
L051	Amount of PLUS loan
L053	Amount of the state-sponsored parent loan
L055	Amount of the school-sponsored parent loan
L057	Amount of the signature loan
L059	Amount of the home-equity loan
L061	Amount of the line of credit
L063	Amount of loan against a life insurance policy
L065	Amount of the commercial loan
L067	Amount of loan from non-profit underwriter
L069	Amount of Family Educ Loan from Sallie Mae
L071	Amount of loan against a retirement fund
L073	Amount of loan from a former spouse/friend
L076	Amount of other type of loan
L078	Has student taken out a loan for his/her educ
L079	Extent parents will help repay student's loans
L081	Extent to which student repays parents loans
L11A	Provide student with housing
L11B	Provide student with meals
L11C	Provide student with clothing
L11D	Provide student with charge cards
L11E	Provide help with student's auto loans
L11F	Provide student with help to automobile repairs
L11G	Provide student with any type insurance
L19A	Use money fm savings, money markets, or CDs
L19B	Use money from a trust fund for school expenses
L19C	Use stocks, bonds, or mutual funds for educ
L19D	Use money from other real estate investments
L19E	Use life insurance policies for educ
L19F	Use some other source for students educ costs
L20A	Savings, CDs set aside for stdnt's educ
L20B	Trust fund set up specifically for student educ
L20C	Stocks, bonds, set up for stdnt's educ
L20D	Other real estate investmnts for stdnt's educ
L20E	Life insurance policies set up for student's educ
L20F	Other source set up for student's educ
L21A	Name on account-savings, money mkts, CDs
L21B	Name on account-trust fund
L21C	Name on account-stocks, bonds, mutual funds
L21D	Name on real estate investments
L21E	Name on life insurance policies
L21F	Name on account-other source of support
L42A	Take out a second mortgage for educ expenses
L42B	Take on an extra job to help with educ expenses
L42C	Work more hours per week at job for educ expenses
L42D	Use income from your regular job for educ expenses
L42E	Use funds previously for retirement for educ
L42F	Borrow money, e.g.home equity or line for educ
L50A	Take out a PLUS loan
L50B	Take out a state-sponsored parent loan
L50C	Take out a school-sponsored parent loan
L50D	Take out a signature loan
L50E	Take out a home equity loan
L50F	Take out a line of credit
L50G	Take out a loan against a life insurance policy
L50H	Take out a commercial loan
L50I	Take out a loan from non-profit underwriter
L50J	Take out a Family Educ Loan from Sallie Mae
L50K	Take out a loan against a retirement fund
L50L	Take out a loan from an ex-spouse, other relative
L50M	Take out any other type of loan not mentioned
LX10	Est. of amt. of addtn'l non-money support by Ps
LXX4	Estimate of Par contribution to school expenses
LXX6	Est. of amt. contrib. by ex-spouse, other friends
LXX7	Estimated amount loaned to student for school exp
M001	Was the student a dependent of the parent
M002	Number of dependents parents supported
M004	Num. of Ps' dependents in schl at least halftime
M006	Amt. pd for educ expenses for all dependents92-93
M007	Number of children who have attended a PSE
M008	Dependents in second./elem. school with tuition/fees, in 1991
M009	Num. of depends in elem/secondary school w/ tuition/fees in 91
M010	Tuition and fees paid for elementary/secondary schools in 1991
MX08	Dpndnts in elementary/secondary school w/ tuition/fees in 92
MX09	Num. dependents in secondary/elem. school w/ tuition/fees-92
MX10	Tuition and fees paid for elementary/secondary schools in 1992
N004	Employed at any time during the calendar year 1992
N005	During 1992, #weeks parent respondent not employed
N008	Est. 91 total income, all sources-groupings
N010	Est household's average monthly living cost 1992
N011	Total value of cash/checking accounts in May 1992
N012	Total value of retirement/pension accounts-May 92
N014	Amount still owed on home in May 1992
N015	Total value of business, including farms-May 1992
N016	Amount still owed on business/farms-May 1992
N019	Total of other real estate & investments-5/92
N01A	Is parent respondent retired

CATI Data Elements

N020	Amount owed other real estate & investments-5/92
N022	Any of this money for educ of parent/spouse
N023	This money for educ of parent's other children
N025	Any of money for educ was for sample student
N028	Of total amount borrowed for educ, amount owed
N030	Currently, amount owed on all other debt
N032	Tax form filed for 1991
N033	Total number of exemptions for 1991
N034	Total 1991 income from all jobs
N035	Est. of 91 parent inc., all jobs-grouping> $30K
N036	Spouse total income from all jobs in 1991
N037	Est spouse 1991 job income-more/less than $30K
N039	Amount of other taxable income in 1991
N043	Parent certified as dislocated worker in 1/92-4/93
N044	Steadily employed full-time for last 5 years
N045	Parent working unpaid at home instead of working
N046	Past 5 yrs, dpndnt on pub. assstnce/oth. fam.
N048	Is parent unemployed/underemployed
N049	Is parent having difficulty upgrading employment
N053	Claim student as tax exemption in 1989
N054	Claim student as tax exemption in 1990
N055	Claim student as tax exemption in 1991
N108	Est. P 92 income from all sources-groupings>= $30K
N134	Total income from all jobs in 1992
N135	Estimate of 1992 job income-groupings > $30,000
N136	Spouse's total 1992 income from all jobs
N137	Est. of spouse 92 inc from all jobs-> $30K
N503	Estimate of income tax liability for 1991
N55A	Claim student as tax exemption in 1992
N5X2	Total income tax liability for 1991
N600	Is respondent the student's mother or father
NA27	Amt. of money borrowed for educ-all family members
NB07	Parent 1991 total income from all sources
NB13	Total value of home-May 1992
NB21	Parent borrow money for educ for anyone in family
ND13	Total value of home-currently
NE11	Total cash/saving/checking accounts-currently
NE12	Value of retirement/pension accounts-currently
NE14	Amount still owed on home-currently
NE15	Total value of business, including farms-currently
NE16	Amount still owed on business/farms-currently
NE19	Tot current value other real estate & investments
NE20	Amount owed on other real estate & investments
NP15	Refinancing done on other real estate-May 92
NR09	Household's average monthly living costs in 92
NS07	Parent 1992 total income from all sources
NS15	Refinance of real estate other than primary home
NX11	Estimate value of cash/saving/checking May 1992
NX13	Estimate of value of retirement/pension May 1992
NX14	Estimate of value of home-May 1992
NX15	Estimate of the amount owed on home-May 1992
NX16	Estimate value of business/farms-May 1992
NX17	Estimate the amount owed on business/farm
NX20	Est value other real estate& investments- 5/92
NX21	Amt owed on othr real estate& investmnts- 5/92
NX31	Estimate amount owed on all other debt
NX32	Answers to tax questions 91 tax form or estimated
NX34	Estimate total 1991 income from all jobs
NX35	Est. of 1991 income from all jobs-groupings
NX37	Est. of spouse's 1991 job income-groupings
NX38	Est. of spouse's 1991 job income-groupings
NX40	Estimate of other taxable income in 1991
NX41	Received food stamps in 1991
NX43	Value of the food stamps received in 1991
NX44	Received Social Security in 1991
NX45	Received AFDC or ADC in 1991
NX46	Received child support in 1991
NX47	Received any other untaxed income in 1991
NX48	Total amount of untaxed income received in 1991
NX49	Est of the total untaxed income received 1991
NXX8	Est. 1991 total income, from all sources
NY04	Spouse employed at any time during 1992
NY05	Weeks spouse not employed, 1992
NY11	Estimated current value of cash/savings/checking
NY13	Estimated current value of retirement/pension
NY14	Estimated value of home-currently
NY15	Estimated current amt owed on value of home
NY16	Estimated value of business/farms-currently
NY17	Estimated amount owed on business/farms-currently
NY1A	Spouse retired
NY20	Estimate current other real estate and investment
NY21	Est. current amount owed on other real estate and
NY34	Estimated parent's total inc from all jobs 1992
NY35	Estimated 1992 job income-groupings
NY37	Estimated spouse's 1992 job income-groupings
NY38	Est. spouse's 1992 income all jobs-groupings
NY39	Estimate of other taxable income in 1992
NY40	Estimated range of other taxable income in 1992
NY43	Spouse certified as a dislocated worker
NY44	Spouse employed full-time for the last five years
NY45	Spouse unpaid work at home, instead of work-5 yrs
NY46	Spouse dpnds on public aid/family, last 5 yrs.
NY48	Spouse unemployed/underemployed
NY49	Spouse having difficulty in upgrading employment
NYX7	Estimated P's total 1992 income from all sources
NYX8	Estimate of 1992 total income
NZ41	Received food stamps in 1992
NZ43	Value of the food stamps received in 1992
NZ44	Received Social Security in 1992
NZ45	Received AFDC or ADC in 1992
NZ46	Received child support in 1992
NZ47	Received any other untaxed income in 1992
NZ48	Total amount of untaxed income received in 1992
NZ49	Estimated amount of total untaxed income for 1992
OCD2	Occupation code-spouse
OCDE	Occupation code-parent respondent
P001	Race of the parent
P002	Is parent of Hispanic origin
P003	Type of Hispanic descent of parent
P004	Type of Asian/Pacific Islander descent
P005	In what year was parent born
P006	Highest level of educ parent has completed
PJ06	Did parent earn an Associate's degree
PK06	Did your parent's spouse earn Associate's degree
PX05	In what year was parent's spouse born
PX06	Highest level of educ your parent's spouse
Q001	Student applied for financl aid for educ after HS
Q2A	Didn't apply for aid-family/student could pay
Q2B	Didn't apply for aid-not willing to go into debt
Q2C	Didn't apply for aid-family income too high
Q2D	Didn't apply for aid-student's low grades
Q2E	Didn't apply for aid-too difficult to apply
Q2F	Didn't apply for aid-not want to tell finances
Q2G	Didn't apply for aid-ineligible, part-time
Q2H	Didn't apply for aid-no money available
Q2I	Didn't apply for aid-missed application deadline
Q2J	Didn't apply for aid-didn't know about fin aid
Q2K	Didn't apply for aid-other reason
R004	Have you discussed graduate school with student
R005	Is student planning/attending graduate school
R006	Assist student in selecting a graduate school
R008	Help student look for job in the past year
R011	Who completed the parent interview
R1A	Consider the graduation rate at sample school
R1B	Consider the campus crime rate at sample school
R1C	Consider the job placement rate at sample school
R7A	Assisted in selecting school-visited campuses
R7B	Assisted in selecting school-letters of recommend
R7C	Assisted in select schl-paid for visits to campus
R7D	Assisted in selecting schl-bought/reviewed guide
R7E	Assisted selecting schl-wrote to schl for info.
R7F	Assisted selecting school-asked others for info
R7G	Assisted in selecting school-other
R9A	Helped with job search-helped send out resumes
R9B	Helped with job search-looked through want ads
R9C	Helped with job search-asked friends/relatives
R9D	Helped in job search-solicited letters of recommendation
R9E	Helped in job search-gave S money for support
R9F	Helped in search-paid for printing business cards
R9G	Helped in job search-bought student a suit/clothes
R9H	Helped in job search-assisted in paying for travel
R9I	Helped job search-looked at job boards-own company
R9J	Helped job search-employment agency, recruiters
R9K	Helped with job search-campus job placement office
R9L	Helped job search-assisted S in attending fairs
R9M	Helped in job search-encouraged S to use want ads
R9N	Helped in job search-subscribed to trade journals
R9O	Helped in job search-did nothing
R9P	Helped in job search-other
ST1	State of legal residence

Derived Variables

DERIVED VARIABLES [ALL STUDENTS]

ACT	Act Composite Score
Actvduty	On Active Duty in United States Military
Admreq1	Require Hs Diploma/equivalent (Ipeds)
Admreq10	Require Toefl or Equivalent (Ipeds)
Admreq2	Require Hs Class Standing (Ipeds)
Admreq3	Require Test Scores (Ipeds)
Admreq4	Require Sat (Ipeds)
Admreq5	Require Act (Ipeds)
Admreq6	Require Other Test (Ipeds)
Admreq7	Require Residence (Ipeds)
Admreq8	Require Ability to Benefit (Ipeds)
Admreq9	Require Age (Ipeds)
Affiltn	Affiliation
Anyhilvl	Highest Level of Educ Ever Expect to Complete
Calsys	Calendar System (Ipeds)
Cenrace	Race of Student (Census Categories)
Complpgm	Degree Program Completed During 1992-93
Comserhr	Student's Current Hours/week
Comservl	Ever Done Any
Credhrs	Number of Credit Hours Taken During 1992-93
Datasrc	Data Collection Sources
Deafness	Hearing Impaired or Deaf
Disablty	Does Student Have Any Disabilities
Emwkhr2	Average Hours Worked/week 07/92---06/93
Emwkhr3	Avg Hours Worked/week When Enrolled 1992-93
Enlen	Number of Months Enrolled for During 1992-93
Enr19192	Enrolled in a Pse Any Time During 91-92
Enrlcatb	Control & Size (Total Enrollment)
Enrol192	Enrollment in 1992
Evervote	Ever Voted in Any Election
Fampay	Family/student Could Pay
Fatheduc	Highest Level of Educ Completed by Father
Fconrel	Amount Others Paid for 1992-93 Costs
Fips	State Institution Is Located (Ipeds)
Futrcar2	Performed Other than During Npsas Year
Futrcare	Service Related to Future Career
Futrplan	What Does Student Plan to Be Doing next Year
Gender	Gender
Gpa	Grade Point Average (Cumulative)
Hardapp	Too Hard to Apply for Aid
Healtoth	Other Health Related Disabilities
Hiincome	Family Income Too High
Hrsperwk	Clock Hours Required per Week
Hsdeg	Type of High School Diploma
Hsgradyy	High School Graduation Year
Hstype	Type of High School Graduated from
Jobnum	Number of Jobs 1992-93
Learndis	Have a Specific Learning Disability
Lowgrade	Grades/test Scores Too Low
Majors	Major Field of Study
Majors2	Major Field of Study - Full Codes
Majors3	Major Field of Study
Misdline	Missed Application Deadline
Motheduc	Highest Level of Educ Mother Ever Completed
Noaidmon	No Money Available for Aid
Nodebt	Did Not Want Debt
Nodisclo	Did Not Want to Disclose Finances
Noeligbl	Attended School Part-time and Was Ineligible
Noenroll	Number of Terms Enrolled During 1992-93
Obereg	Region (Obe Code) of Institution (Ipeds)
Ortho	Have an Orthopedic or Mobility Limitation
Othdegrs	Num Other Degrees, Licenses, Certificates
Otherany	Reason No Apply for Aid-any Other Reason
Pareduc	Highest Educ Level Completed by Either Par
Presvote	Vote in the 1992 Presidential Election
Pstsecyr	Year First Enrolled in Pse
Race	Race and Ethnicity of Student
Racesex	Race/ethnicity & Gender
Ratecrim	Consider Campus Crime Rate Decide to Attend
Rategrad	Consider Graduation Rate Deciding to Attend
Rateplac	Consider Job Placement Deciding to Attend
Regvote	Registered to Vote in the Us
Remmath	Remedial Help in Mathematics During 1992-93
Remread	Remedial Help in Reading During 1992-93
Remstsk	Remedial Help with Study Skills in 1992-93
Remwrite	Remedial Help in Writing During 1992-93
Samhilvl	Highest Level of Educ Expected to Completed
Sampstat	Comparable to 1986-87 Npsas
SATM	SAT Score-math Section
Sattotal	SAT Score-composite Score
Satv	SAT Score-verbal Section
Savbonds	Use Us Savings Bonds for 92-93 Expenses
Saveschl	Funds Used for 1992-93 School Expenses, Amount from Personal Savings
Servclas	Was Any Service Required by Classes
Servcur	Community Service in 1992-93
Servfutr	Plan to Do Community Serv in next 12 Months

SNOAPP1	Why student did not apply for aid-1st resp
snoapp2	Why student did not apply for aid-2nd resp
snoapp3	Why student did not apply for aid-3rd resp
SPEECH	Have a speech disability or limitation
SPSEMP	Spouse employed
STSAVPLN	Use a college prepayment plan
STUIND1	Industry coding
STUOCC1	Occupation coding
TRANSFER	Transfer to sample school during the NPSAS
UNSAFE	How often concerned about personal safety
VETERAN	Veteran of US armed forces
VISUAL	Vision impairment or legally blind keeper
MOSTEMPL	Number of months for longest job held
APPRTSHP	Participate in an apprenticeship program
COOPPROG	Participate in a cooperative educ program
INTRNSHP	Participate in an internship/practicum
COMPTYPE	Type of company or organization S worked for
JBMAJREL	How close job related to major/area of study
JOBLOCAT	Job on or off campus
JOBMAJOR	Job related to current major
JOBLOOK	Availability for employment status of std
LOANDFLT	Respondent in default on a fed loan/grant
YRRECAID	Beginning in 1987-88, year first receive federal financial aid
FOODSTMP	S or S's parents get food stamps since Jan 92
ST_TIME	Total elapsed time to complete S interview
CDAT	Date completed interview/date of last contact
ZACT	Data source for derived variable ACT
ZCENRACE	Data source for derived variable CENRACE
ZCREDHR	Data source for derived variable CREDHRS
ZGENDER	Data source for derived variable GENDER
ZHRSPER	Data source for derived variable HRSPERWK
ZHSDEG	Data source for derived variable HSDEG
ZLENGTH	Data source for derived variable LENGTHCL
ZMAJOR2	Data source for derived variable MAJORS2
ZNOENRL	Data source for derived variable NOENROLL
ZRACE	Data source for derived variable RACE
ZSATTTL	Data source for derived variable SATTOTAL
ZSPSEMP	Data source for derived variable SPSEMP
ZVETERN	Data source for derived variable VETERAN
LENGTHCL	Length of clock hour program

B&B STUDENTS

ASSIST1	Parent help select grad school-visit campus
ASSIST2	Parnt help select grad schl-solicited lettrs
ASSIST3	Parnt help select grad schl-paid for trips
ASSIST4	Parnt help select grad schl-purchased guides
ASSIST5	Parent assist selecting grad schl-wrote to school for information
ASSIST6	Parent assist selecting grad school-asked info of those that attended
ASSIST7	Parent assist selecting grad school-other
BECMAUTH	Become authority in given field
BETTRJOB	Better chance to get job at school
COSTLIVE	Other living costs were less
COURSOFF	Offered course of study wanted
ENROLL1	Enroll in grad school-advanced degree needed
ENROLL2	Enroll in grad school-undecided about career
ENROLL3	Enroll in grad school-expand knowledge field
ENROLL4	Enroll in grad school-parents wanted S to go
ENROLL5	Enroll in grad school-others wanted S to go
ENROLL6	Enroll in grad school-enjoy school
ENROLL7	Enroll in grad school-easier now than later
ENROLL8	Enroll in grad school-parents will help pay
ENROLL9	Enroll in grad school-some other reason
FACTORA	Previous work experience in the area
FACTORB	Good income to start
FACTORC	Job security and performance
FACTORD	Work that seems important/interesting
FACTORE	Freedom to make own decisions
FACTORF	Meeting/working with friendly people
FACTORG	Good income potential over career
FACTORH	Prestige and status
FACTORI	Intellectually challenging work
FACTORJ	Able to work independently
FACTORK	Allows a great deal of travel
FACTORL	Allows roots to be established
FACTORM	Time for extracurricular activity
facwrk1	Factor for working next year-first response
facwrk2	Factor for working next year-second response
facwrk3	Factor for working next year-third response
FARAWAY	School was far away from home
FINAID	Obtained financial aid needed
FINDJB01	Find current job-sent out resumes
FINDJB02	Find job-went to campus placement office
FINDJB03	Find current job-looked through want ads
FINDJB04	Find current job-asked friends
FINDJB05	Find current job-asked family

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Derived Variables

FINDJB06	Find current job-asked professors
FINDJB07	Find current job-attended recruiting fairs
FINDJB08	Find current job-did volunteer work in field
FINDJB09	Find current job-job boards in unemp office
FINDJB10	Find current job-contacted employment agncy
FINDJB11	Find current job-placed want ad
FINDJB12	Find current job-subscribed to trade journls
FINDJB13	Find current job (y/n)-nothing
FINDJB14	Find current job (y/n)-other
FINDWORK	Be able to find steady work
FRIENDAT	Friends attended the school
GD_REP	School has good reputation
GETAWAY	Get away from this area of country
GIVEKIDS	Give own children better opportunity
GRADACP1	Admission acceptance at 1st choice grad schl
GRADACP2	Admission acceptance at 2nd choice grad schl
GRADACP3	Which choice of graduate/professional school will student be attending
grscfac1	Factor1 for entering grad school next year
grscfac2	Factor2 for entering grad school next year
grscfac3	Factor3 for entering grad school next year
HAVEKIDS	Have children
HELPJB01	Parent help job search-sent out resumes
HELPJB02	Parent help-looked through want ads
HELPJB03	Parent help job search-asked friends
HELPJB04	Parent help search-solict recommendations
HELPJB05	Parent help job search-gave money
HELPJB06	Parent help job search-paid for printing
HELPJB07	Parent help job search-bought S clothes
HELPJB08	Parent help job search-helped pay for travel
HELPJB09	Parent help job search-looked at job boards
HELPJB10	Parent help job search-contact emplymnt agcy
HELPJB11	Parent help search-went to campus placement
HELPJB12	Parent help search-attend recruiting fairs
HELPJB13	Parent help job search-placed want ads
HELPJB14	Parent help job search-looked at trade jrnls
HELPJB15	Parent help job search-did nothing
HELPJB16	Parent help job search-other
INFLUNCE	Select grad school-other influence reason
INRESRCH	Select grad school-research is interesting
JOBSCH01	Find future job-sent out resumes
JOBSCH02	Find job-went to campus placement office
JOBSCH03	Find future job-looked through want ads
JOBSCH04	Find job-asked family/friends/professors
JOBSCH05	Find job-opportunities through interviews
JOBSCH06	Find future job-attended recruiting fairs
JOBSCH07	Find future job-did volunteer work in field
JOBSCH08	Find job-looked job boards in unemp office
JOBSCH09	Find future job-contacted employment agency
JOBSCH10	Find future job-placed want ads
JOBSCH11	Find future job-subscribed to trade journals
JOBSCH12	Find future job-did nothing
JOBSCH13	Find future job-other specify
JOBSRC1	What doing to find future job-first response
JOBSRC2	What did to find future job-second response
JOBSRC3	What did to find future job-third response
LABEXCPT	Select grad school-lab facilities exceptnal
LEADCOMM	Be a leader in my community
LEISURE	Have leisure time to enjoy own interest
LIVCLOSE	Live close to parents and relatives
LIVEHOME	Select grad school-could live at home
LOCATION	Select grad school-othr location reason
OTHREASN	Other cost related reason
OWNBUSIN	Become successful in own business
PARENT	Select grad school-parents wanted S to go
PARNATT	Parent(s) attended the school
PJOBSR1	Help in job search (P)-first response
PJOBSR2	Help in job search (P)-second response
PJOBSR3	Help in job search (P)-third response
PLACEMNT	Good reputation for placing graduates
PLNWRK01	Factor for work-no additional educ debt
PLNWRK02	Factor for work-money to support family
PLNWRK03	Factor for work-didn't get financial aid
PLNWRK04	Factor for work-family/personal reasons
PLNWRK05	Factor for work-didn't meet applic. date
PLNWRK06	Factor for work-not admitd to schl of choice
PLNWRK07	Factor for work-want break from school
PLNWRK08	Factor for work-good job opportunity
PLNWRK09	Factor for work-career plans indefinite
PLNWRK10	Factor for work-need work experience
PLNWRK11	Factor for work-some other reason
POLSTRUC	Influence the political structure
PROFESSR	Certain professor teaches here
REPUTATN	Select grad school-some othr reputation reason
SCHCLOSE	Select grad school-close to home
SCHLNWRK	Select grad school-can go to school and work
schpik1	Parent assist selecting grad school-1st resp
schpik2	Parent assist in selecting grad schl-second
schpik3	Parent assist selecting grad school-third
selgrad1	Why select grad school-first response
selgrad2	Why select grad school-second response
selgrad3	Why select grad school-third response
SERVTHRS	Total hours of community servicelast 2 yrs
SETTLE	Located where respondent wants to settle
SHORTER	Shorter time period to finish the course
sjobsr1	What did to find current job-first resp
sjobsr2	What did to find current job-second resp
SJOBSR3	What did to find current job-third resp
SUCCESS	Be successful in line of work
SURROUND	Select grad school-like campus surroundings
TUITLESS	Tuition & other expenses were less
WELLOFF	Being very well off financially
WORKTIME	During next 12 months, S plan to work
wrkfut1	Factor for future work-first response
wrkfut2	Factor for future work-second response
wrkfut3	Factor for future work-third response keeper
ZGRADA2	Data source for derived variable GRADACP2
ZGRADA3	Data source for derived variable GRADACP3

GRADUATE STUDENTS

ACTVDUTY	Student: Military
ADDJOB	Needed money, worked or took additional job
AFFILTN	Institution: Affiliation
APPLOAN	Needed money, applied for loans
ASKPARNT	Needed money, asked for money/more money
ATTEND	Attendance status: Intensity
ATTNST3	Attendance status: Persistence status
ATTNSTAT	Attendance status: Persistence
BACKHOME	Needed money, moved back home
BETTRJOB	Why attend (S):Better chance to get job inst
BORAMT2	Amount student borrowed graduate educ
CALSYS	Institution: Calendar system (IPEDS)
COMSERHR	Community service: Current hours/week
COMSERV1	Community service: Ever done any
CONTROL	Institution: Control
COSTLIVE	Why attend (S): Other living costs were less
COURSOFF	Why attend (S): Offered courses wanted
CREDHRS	Attendance status: Credit hours
CTZNSHP	Student: Citizenship
CUTDOWN	Needed money, cut down on expenses
DADOC	Parents: Father's occupation
DATASRC	Sources--data collection sources
DEAFNESS	Disability: Hearing impaired or deaf
DISABLTY	Disability: Any
EARNSCHL	Fund source: Amount from own earnings
EM2ENRL	Employment/enrollment ratio: employed during month enrolled
EMPLPRD2	Employment, period (summer,term, both)
EMWKHR1	Employment, avg hrs work/week when employed
EMWKHR2	Employment, average hours worked 07/92-06/93
EMWKHR3	Employment, avg hrs worked when enrolled
ENEMPL	Employment, number of months (excludes CWS)
ENLEN	Enrollment, number of months
ENRLCATB	Institution: Control & size
ENROLL91	Institution: Enrollment in 1991
ENROLLED	Enrollment, plans for next year
FARAWAY	Why attend (S): School was far from home
FATHEDUC	Parents: Educ
FCONREL	Amount others paid for 1992-93 costs
FELLAMT	Funds: fellowship amount
FINAID	Why attend (S): Got financial aid needed
FIPS	Institution: State (IPEDS)
FRIENDAT	Why attend (S): Friends attended the school
FUTRCAR2	Community service: Prior
FUTRCARE	Community service: Current
GD_REP	Why attend (S): School has good reputation
GENDER	Student: Gender
GPA	Student: GPA (cumulative
HEALTOTH	Disability: Other health related
HOMEREGN	Student: Legal residence
HSDEG	Student: High school degree or equivalent
HSGRADYY	Student: High school
JOBNUM	Employment, number of jobs 1992-93
LEARNDIS	Disability: Learning disability
LEVEL	Institution: Type
LIVEHOME	Why attend (S): Could live at home
LOANREL	Amount others loaned for 1992-93 costs
LOCALRES	Student: Local residence
MAJORS	Student: Major field of study
MARITAL	Student: Marital status
MOMOC	Parents: Mother's occupation
MOTHEDUC	Parents: Educ
NOENROLL	Attendance status: Terms/periods enrolled
NOSCH	Attend: number of institutions in 1992-93
NUMNEMPL	Employment, number of months (includes CWS)
OBEREG	Inst: Region (OBE code) of inst (IPEDS)
OPCON1	Institution: Type and control
ORTHO	Disability: Orthopedic limitation
PARENT	Why attend (S): Parents wanted S to go
PARNTATT	Why attend (S): Parents attended the school

Derived Variables

PLACEMNT	Why attend (S):Good reputation placing grads
PROGTYP	Student: Degree program
PSTSECYR	Enrollment, year first enrolled in PSE
PSVCHOUR	Community service: Prior hours
RACDINC	Student: Race ethnicity
RACE	Student: Race/ethnicity
RACESEX	Student: Race/ethnicity & gender
REDUCELD	Needed money, reduced course load
REJCTAID	Reject financial aid-ever
SAMEPROG	Student: Plans to be in same prog in next yr
SAMEREGN	Student: Legal residence in same region
SAMESTAT	Student: Legal residence same as state
SAMPSTAT	Comparable to 1986-87 NPSAS
SAMPTERM	Sampled term
SAVBONDS	Fund source: Savings Bonds (US)
SAVESCHL	Fund source: Amount from own savings
SCHCLOSE	Why attend (S): School is close to home
SCHLNWRK	Why attend (S): Can go to school and work
SHORTER	Why attend (S): Could finish in shorter time
SPEECH	Disability: Speech limitation
SPERNSCH	Fund source: Amount from spouse earnings
SPSAVSCH	Fund source: Amount from spouse savings
STUIND1	Student: Job industry
STUOCC1	Student: Job occupation
TRANSFER	Needed money, transferred to cheaper school
TUITLESS	Why attend (S): Tuition & othr expenses less
VETERAN	Student: Veteran of US armed forces
VISUAL	Disability: Partially sighted or blind
WHRS1	Employment: Hours/week 92/07 (includes CWS)
WHRS10	Employment: Hours/week 93/04 (includes CWS)
WHRS11	Employment: Hours/week 93/05 (includes CWS)
WHRS12	Employment: Hours/week 93/06 (includes CWS)
WHRS2	Employment: Hours/week 92/08 (includes CWS)
WHRS3	Employment: Hours/week 92/09 (includes CWS)
WHRS4	Employment: Hours/week 92/10 (includes CWS)
WHRS5	Employment: Hours/week 92/11 (includes CWS)
WHRS6	Employment: Hours/week 92/12 (includes CWS)
WHRS7	Employment: Hours/week 93/01 (includes CWS)
WHRS8	Employment: Hours/week 93/02 (includes CWS)
WHRS9	Employment: Hours/week 93/03 (includes CWS)
WITHDRAW	Needed money, withdrew from school
WORKPROG	Employment plans for next year
WORKTIME	Employment plans, work full or part-time
XEMPL1	Employment/enrollment status (CWS) 92/07
XEMPL10	Employment/enrollment status (CWS) 93/04
XEMPL11	Employment/enrollment status (CWS) 93/05
XEMPL12	Employment/enrollment status (CWS) 93/06
XEMPL2	Employment/enrollment status (CWS) 92/08
XEMPL3	Employment/enrollment status (CWS) 92/09
XEMPL4	Employment/enrollment status (CWS) 92/10
XEMPL5	Employment/enrollment status (CWS) 92/11
XEMPL6	Employment/enrollment status (CWS) 92/12
XEMPL7	Employment/enrollment status (CWS) 93/01
XEMPL8	Employment/enrollment status (CWS) 93/02
XEMPL9	Employment/enrollment status (CWS) 93/03
ZHOMSTAT	Student: State of legal residence
ATTNST4	Attendance status:persistence and intensity
YRSINPSE	Number of years in postsecondary educ
COMPLPGM	Program completed during NPSAS year
ATTNST4	Attendance status:persistence and intensity
BABR	Received baccalaureate degree in NPSAS:93
AGE	Student: Age as of 12/31/92
AIDPACK	Package with grant
AIDRATIO	Ratio of total aid to total cost
AIDSRC1	Package with Title IV
AIDSRC2	Package with Federal financial aid
APPFORM	Financial aid application form used
ASSTAMT	Assistantship amount
ASTAMT	Assistantship amount (all types)
AVEEXP	Cost1: Average monthly household expenses
BOOKCOST	Cost1: Books and supplies
BORAMT1	Amount student borrowed undergraduate educ
CAMPAMT	Federal amount: Campus-based
CMBOOKS	Cost2: CM Books and supplies costs
CMBUDGET	Cost2: CM Non-tuition/fees total costs
CMCOSTS	Cost2: CM Total costs
CMDPNDNT	Cost2: CM Dependent costs
CMHANDCP	Cost2: CM handicapped allowance
CMMISC	Cost2: CM Miscellaneous costs
CMROOM	Cost2: CM Room and board costs
CMTRANS	Cost2: CM Transportation costs
CMTUIT	Cost2: CM Tuition and fees costs
CWSPAMT	Federal amount, CWS award amount
CWSPERND	Federal work: CWS earned
DEPEND	Student: Dependency status
DEPINC	Income, dependent student family 1991 AGI
EFC1	EFC: Recorded expected family contribution
EFC2	EFC: Derived expected family contribution
EFC3	EFC: Composite expected family contribution
EMPLYAMT	Total employer aid amount
EVERAPLY	Aid application for aid prior to 1992-93
FAMFARM	Family assets: Family farm owned
FAMINC	Family income: Income, adjusted gross 1991
FAMINCPR	Family income: Family income
FAMNUM2	Family, number (based on dependency status)
FARMVAL	Family assets: Farm value
FC3PCT	Need: Ratio, EFC3 to total cost
FED8791	Funds: Received federal aid in 1987-91
FEDAMT1	Federal loan: Total amount (except VA/DOD)
FEDAMT2	Federal loan: Total amount (incl VA/DOD)
FEDFINAN	Funds: Received federal aid in 1991-92
FEDLNCT	Federal loan: Total number (except ICL)
FEDPACK2	Funds: Package with federal aid
FEDPCT	Funds: Ratio of federal aid to total aid
FEDTAX2	Family income: Federal taxes paid REVISED
GRTLOAN	Funds: Ratio of grants to total loans
GRTPCT	Funds: Ratio of grants to total aid
GRTRATIO	Funds: Ratio of grants to grants and loans
HOMEQ	Home equity (based on dependency status)
INCOME	Family income: Income and dependency level
INDEPINC	Family income independ student & spouse 1991
INGRTAMT	Institution: Grant total
INJURIS	Cost1: Jurisdiction for tuition
INLNAMT	Institution: Loan total
INNEEDGR	Institution: Need-based grant amount
INNONDGR	Institution: Non-need-based grant amount
INOTHAMT	Institution: Other amount
INSTAMT	Institution: Total amount
INSTCWS	Institution: CWS amount
INSTNEED	Institution: Need-based amount
INSTNOND	Institution: Non-need-based amount
INSTPCT	Funds: Ratio of institution aid to total aid
LOANPCT	Funds: Ratio of loans to total aid
NONFMCST	Cost2: CM Cost minus EFC
NREFCON	Parent contribution: Total
NREFLOAN	Par contribution: Loan amount (non-referent)
OFFCOST	Cost1: Other off-campus expenses
OTHERAID	Other: Not federal/state/institution)
OTHERAMT	Other: Total aid amount
OTHERTAX	Taxes: Allowance for state & other taxes
OTHFDAMT	Federal amt: Other amount (including VA/DOD)
OTHGTAMT	Other: Grant total (not fed/state/inst)
OTHLNAMT	Other: Loan total (not fed/state/inst)
OTHRCOST	Cost1: Other educ expenses
OTHRMCST	Cost1: Other room expenses
OTHSCAMT	Total aid amount at other institutions
OWEAMT	Borrowed: Amount student still owed
PARCONTR	Parent contribution: Total
PAREDUC	Parents: Educ
PARLOAN	Parent contribution: Loan amount total
PERKAMT	Federal loan: Total Perkins amount
PLUSAMT	Federal loan: PLUS amount
POSTED	Family, postsecondary educ number
PRICE1	Total cost minus total grants
PRICE2	Total cost minus total grt minus 1/2 tot ln
PRICE3	Need: Total cost minus total aid
REFCONTR	Parent contribution: Total
REFINC91	Family income: Parent income 1991
REFINC92	Family income: Parent income 1992
REFLOAN	Parent contribution: Loan amount (referent)
REFPAR	Parent, referent for aid purposes
RESAMT	Funds: Research assistantship amount
RNEED1	Total cost minus EFC3
RNEED2	Total cost minus EFC3 minus tot fed aid
RNEED3	Total cost minus EFC3 minus tot fed grt
RNEED4	Total cost minus EFC3 minus total aid
RNEED5	Tuition and fees minus EFC3
RNEED6	Total cost minus EFC3 minus total grants
ROOMCOST	Cost1: Room and board expenses
SAI	Student aid index (SAI/PGI)
SCHOLAMT	Total scholarship total amount
SEXDINC	Gender dependency & income
SINGLPAR	Student: Single parent
SLSAMT	Federal loan: SLS amount
SPSINC	Family income: Spouse's income
STAFFAMT	Federal loan: Stafford amount
STAFPACK	Funds: Package with Stafford loans
STAPCT	Funds: Ratio of state aid to total aid
STATEAMT	State: Total amount
STATNEED	State: Need-based amount
STATNOND	State: Non-need-based
STGTAMT	State: Grant total
STLNAMT	State: Loan total
STOTHAMT	State: Other total amount
STSAVPLN	Fund source: Savings plan (State)
T4AMT1	Federal loan: Title IV (except PLUS)
T4AMT2	Federal loan: Title IV (including PLUS)
T4PK1AMT	Fund source: Amount from Pell
TCOSTPR	Cost1: Total cost
TCOSTPR2	Cost1: Total cost

Derived Variables

TEACHAMT	Funds: Teaching assistantship amount
TFEDAID	Federal amount: Total amount
TFEDGRT	Federal grant: Total amount
TFEDLN	Federal loan: Total amount (except PLUS)
TFEDOTHR	Federal amount: Other amount (incl PLUS)
TITIVAMT	Federal amount: Title IV amount
TNFEDAID	Total Non-Federal: Total aid amount
TNFEDGRT	Total Non-Federal: Grants amount
TNFEDLN	Total Non-Federal: Loans amount
TNFEDOTH	Total Non-Federal: Other amount
TOTAID	Total aid amount
TOTCOST	Cost1: Total cost 1992-93
TOTGRT	Total grant amount
TOTLOAN	Total loan amount
TOTOTHR	Other: Not grant/loan/CWS (includes PLUS)
TOTWKST	Total work-study amount
TUITCOST	Cost1: Tuition & fees total 1992-93
UNTAXINC	Family income: Income, untaxed
WAIVAMT	Total tuition waiver amount
WKINC	Family income: Student income
WKINCCAL	Family income: Student income
WORKPCT	Funds: Ratio of work-study to total aid
AIDAPP	Funds: Applied for Financial AId
DEPEND2	Student: CM dependency status
CMPC	EFC: CM Parental contribution for dependents
CMSC	EFC: CM student contribution
MAXLOAN	Maximum Stafford Loan amount allowed
TOTLOAN2	Total loans incl from parents & relatives
CMNEEDA-J	Need2: S Budget minus EFC and aid amounts
MERITAID	Total non-need based grants
UNUSEDLN	Unused Stafford Loan Eligibility
STBUDGET	COST4: Standard student budget
AIDAPP	Funds: Applied for Financial AId
DEPEND2	Student: CM dependency status
CMPC	EFC: CM Parental contribution for dependents
CMSC	EFC: CM student contribution
MAXLOAN	Maximum Stafford Loan amount allowed
FEDTAXES	Family income: Federal taxes paid
NETPRC1	Cost: Total minus fed. grants
NETPRC10	Cost: Total minus institution grants
NETPRC11	Cost: Total minus inst grt + half st ln
NETPRC12	Cost: Total minus institution aid
NETPRC2	Cost: Total minus fed. grnt + half loans
NETPRC3	Cost: Total minus federal aid
NETPRC4	Cost: Total minus state & fed. aid
NETPRC5	Cost: Total minus fed grt + half st/fed ln
NETPRC6	Cost: Total minus non-federal aid
NETPRC7	Cost: Total minus state grants
NETPRC8	Cost: Total minus st grt + half st loans
NETPRC9	Cost: Total minus state aid
NONTUIT	Cost: Room, board&other costs(non-tuition)
NUMDEPND	Family: Number of dependents
NUMFEDLN	Funds: Number of federal loans
RMBDCOST	Cost: Room and board on/off campus
SLS_STAF	Funds: SLS and Stafford amount
TFESTGRT	Funds: Total federal and state grants
TFESTLN	Funds: Total federal and state loans
TOTFEDST	Funds: Total federal and state aid
WORK9293	Employment: Outside job (not CWS)

VERBATIM ITEMS

MAJORS	Major field of study
NP93ID	Student CATI id
STUIN_TX	Label for Industry coding
STUOCC1	Occupation coding
MAJ_TEXT	Label for Major field of study
STUIND1	Industry coding-
STUOC_Tx	Label for Occupation coding

PARENTS

BONDPROG	US Educ Savings Bonds
DADOC	Father's occupation
EDTRUST	Used money from trust fund
MOMOC	Mother's occupation
NP93ID	Student CATI id
OTHFUNDS	Use some other source for student's educ costs
PREPAY	Used tuition prepayment plan
BORROW	Borrow money, such as home equity, for educ exp
COMMLOAN	Take out a commercial loan
CREDLOAN	Obtained a line of credit
CURINC	Use income from regular job for educ expenses
EDSAVING	Use money from savings,money markets,CDs
HOMELOAN	Obtained a home equity loan
LIFELOAN	Obtained loan against a life insurance policy
MOREHRS	Worked more hours at job(s) for educ expenses
MOREJOBS	Take extra job to help with educ expenses
NOAPP01	Didn't apply for aid (P)-family/stu could pay
NOAPP02	Didn't apply (P)-family/student not want debt
NOAPP03	Didn't apply for aid (P)-family income too high
NOAPP04	Didn't apply for aid (P)-low student grades
NOAPP05	Didn't apply for aid (P)-too difficult to apply
NOAPP06	Didn't apply (P)-not want to disclose finances
NOAPP07	Didn't apply (P)-student was part-time status
NOAPP08	Didn't apply for aid (P)-no money was available
NOAPP09	Didn't apply (P)-missed deadline for application
NOAPP10	Didn't apply (P)-didn't know about financial aid
NOAPP11	Didn't apply for aid (P)-other reason
OTHRLOAN	Take out any other type of loan not mentioned
PHELPAY	Extent parents will help repay student's loans
PLUSLOAN	Take out a PLUS loan
PNOAPP1	Reason did not apply for aid (P)-first response
PNOAPP2	Didn't apply for aid (S)-second response
PNOAPP3	Didn't apply for aid (S)-third response
REALESTA	Take out second mortgage or refinanc real estate
RETFUNDS	Use funds previously set aside for retirement
RETRLOAN	Take out a loan against a retirement fund
SCHLLOAN	Take out a school-sponsored parent loan
SHELPAY	Extent student repays parents loans for educ
SIGNLOAN	Obtained a signature loan
SMAELOAN	Take out a Family Educ Loan from Sallie Mae
STATLOAN	Obtained a state-sponsored parent loan
UNDRLOAN	Loan from non-profit underwriter, incl TERI
PA_TIME	Total elapsed time to complete parent interview

APPENDIX B

Initial Packet Mailed to Chief Administrator (New, 4-year (or more) Institution)

U.S. DEPARTMENT OF EDUCATION
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT

NATIONAL CENTER FOR EDUCATION STATISTICS

January 1993

Dear Chief Administrator:

Your institution has been selected to participate in the 1993 National Postsecondary Student Aid Study (NPSAS) conducted for the U.S. Department of Education. I am writing to request that you appoint a NPSAS coordinator for your institution. Your participation is very important to the continued success of this study.

During 1993, the National Center for Education Statistics (NCES) will conduct the third cycle of NPSAS, a major study on how students and their families finance education after high school. The first NPSAS was conducted during 1986-87. The second cycle of NPSAS, completed during 1989-90, enhanced the basic data collected in NPSAS:87 to more fully meet the needs of the student financial aid community. In response to the continuing need for the data provided by NPSAS, Congress has mandated that NCES conduct this study every three years.

NPSAS:93 will involve approximately 1400 institutions, 78,000 students, and 27,000 parents. To minimize the burden on you and your staff, we have significantly redesigned the data collection procedures. Further details on the data collection process, our assurance of confidentiality, a listing of national organizations that have endorsed the study, and estimates of time commitments for your institution are enclosed.

During Phase One of the study, the coordinator will be asked to send the enrollment files necessary for student sampling. Phase Two of the study involves the abstraction of data from the sampled students' records and requires some familiarity with the financial aid process. Please select the coordinator based on your institution's organization and method of recordkeeping. Abt Associates Inc., our contractor, will work with your NPSAS institution coordinator to arrange for data collection in an efficient and convenient manner. Enclosed is an institution background participation sheet on which to name your coordinator and provide specific administrative information about your institution.

An Abt Associates representative will contact your coordinator to answer any questions and to discuss the best method of data collection for your institution. If you have any questions about the study or procedures involved prior to this contact, please call the Project Director, John Loft (1-800-638-5034) at Abt Associates or the NCES Project Officer, Drew Malizio (202-219-1448).

As a 1993 NPSAS participant, we will send you and your NPSAS institution coordinator a special summary report similar to the enclosed sample report. These special reports will not be published by NCES and are sent only to participating institutions. Thank you for your cooperation and prompt return of the enclosed sheet with the name of your coordinator and information about your institution.

Sincerely,

Emerson J. Elliott
Commissioner

WASHINGTON, D.C. 20208—

SAMPLE

NPSAS INSTITUTION PARTICIPATION SHEET

PLEASE RETURN THIS SHEET BY FEBRUARY 10, 1993 IN THE ENCLOSED BUSINESS REPLY ENVELOPE OR FAX IT TO PAT WILLIAMS AT (800) 382-4560.

Based on an estimated enrollment of XXXX students during 1992-93, we expect to sample XX students from your institution.

Please review the information below and make any necessary changes.

IPEDS #: 123456
Chief Administrator: DR. CHIEF ADMINISTRATOR
Title: PRESIDENT
Institution: UNIVERSITY OF NPSAS
Street: 123 W. NPSAS AVENUE
City: NPSASVILLE State: NP ZIP: 54321

Please provide the name, title, address, and telephone number of your NPSAS coordinator.

Coordinator Name: _____
Title: _____
Street: _____
City: _____ State: _____ ZIP: _____
Phone: ( ) _____ _____ Ext.: _____

Please enter the names of each of the terms/enrollment periods that BEGIN between May 1, 1992 through April 30, 1993 inclusive. NOTE: DO NOT INCLUDE A TERM IF IT STARTED BEFORE MAY 1, 1992 OR STARTS AFTER MAY 1, 1993.

Term Name	Beginning Date	Ending Date
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__
_____	__/__/__	__/__/__

☐ **We do not have traditional periods of enrollment (i.e. semester, quarter) that apply to all students.**

101 N. Wacker Drive, Suite 400
Chicago, IL 60606-7301

1993 NATIONAL POSTSECONDARY STUDENT AID STUDY
INFORMATION SHEET

The National Postsecondary Student Aid Study (NPSAS) will be conducted during the 1992-93 school year. Data will be collected from approximately 1,400 postsecondary institutions, 78,000 students, and 27,000 parents.

Listed below is a summary of activities we would like to complete at your institution. Information will be gathered in two phases and a choice of methods for collecting data will be provided. As the NCES contractor, we will work with your appointed coordinator to:

PHASE ONE

- Obtain enrollment files/lists for students enrolled during any term/enrollment period that BEGINS any time between May 1, 1992 and April 30, 1993--to select a sample of students for the study.

- At 4-year institutions, these lists/data files should indicate whether the students are graduating seniors, graduate students, or first-professional students. For graduating seniors, also collect the major field of study.

PHASE TWO

- Collect the locating information for sampled students and parents so that telephone interviews can be conducted.

- Collect detailed demographic and academic information for sampled students.

- Collect financial aid information for sampled students receiving aid while enrolled.

These activities may differ somewhat according to your type of institution and method of recordkeeping. To minimize the burden on your staff, computer software has been developed to facilitate your participation in Phase Two of the study. We believe that this software is self-explanatory; however, field staff will be available for assistance.

For institutional coordinators, the time for completing the data collection activities using the computer-assisted data entry software is estimated to vary from 3 to 55 hours per institution, with an average of 19.5 hours over the duration of the study. This includes time for reviewing instructions, locating existing data sources, and gathering the information needed for completing data collection activities. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education; Information Management and Compliance Division, Washington, D.C. 20202-4651; and to the Office of Management and Budget, Paperwork Reduction Project 1850-0666, Washington, D.C. 20503.

We will work with your coordinator to accommodate your preferences as much as possible while maintaining consistent and efficient data collection procedures.

OPENING DOORS OF EDUCATIONAL OPPORTUNITY

N·A·S·F·A·A

January, 1993

Dear Colleague:

We are writing to request that you take the time to participate in the National Postsecondary Student Aid Study (NPSAS), the major study on student financial aid. NPSAS is sponsored by the National Center for Education Statistics of the U.S. Department of Education, and will be conducted by Abt Associates, Inc.

The purpose of NPSAS is to obtain information about student financial aid. The data collected will provide information on the cost of postsecondary education, the distribution of financial aid, and a profile of both aided and non-aided students and their families. I am confident that the information obtained from NPSAS will make a valuable contribution to the financial aid community.

Please note that NPSAS information is used for research purposes only. The privacy and confidentiality of all data will be maintained according to the highest standards.

Your cooperation and assistance will be greatly appreciated.

Sincerely,

Dallas Martin
President

NATIONAL ASSOCIATION OF STUDENT FINANCIAL AID ADMINISTRATORS
1920 L STREET N.W. SUITE 200 WASHINGTON, D.C. 20036-5020 TELEPHONE: 202-785-0453 FAX: 202-785-1487

SAMPLE REPORT

National Postsecondary Student Aid Study: 1989-90
A study by the National Center for Education Statistics
U.S. Department of Education

Institutional report prepared for

YOUR INSTITUTION NAME GOES HERE

National estimate	Similar institutions	Your institution	Characteristic or indicator
25.6	11.4	18.2	% who were 30 or older
72.7	85.0	76.6	% who were single (separated, divorced, never married)
96.9	99.5	100	% who had HS diploma/GED
28.3	19.9	42.7	% living with parent(s)
56.7	54.1	49.1	% living off-campus (not school-owned housing)
95.0	96.7	97.0	% who were US citizens
10.4	7.1	15.3	% with disabilities
50.4	25.6	32.7	% who were 1st year/freshmen in 1989-90
2.80	2.68	2.59	Mean cumulative grade point average
56.1	76.0	54.4	% enrolled full-time
11.8	11.4	3.5	% attended more than one school in 1989-90
909	944	955	Average SAT-total for freshmen
7.9	8.9	8.4	Average number of months enrolled in 1989-90
84.9	98.4	89.4	% expecting to earn at least a BA/BS someday
47.9	67.5	54.2	% who were dependent on parents
21.8	17.2	16.9	% who were dependent with parent income less than $20,000
30.7	43.0	47.8	% independent with income less than $10,000
36.4	42.5	37.1	% who ever borrowed for postsecondary education
$4,961	$5,519	$4,892	Average total amount borrowed
36.0	48.6	37.9	% whose parent has a BA/BS or higher degree
$8,623	$7,753	$6,676	Total costs in 1989-90
$1,690	$1,279	$517	Average amount of tuition & fees for 1989-90
2.1	2.6	1.7	% who received a tuition waiver
$1,439	$1,316	+1,217	Average amount of tuition waiver received
42.8	43.1	27.2	% who received any aid in 1989-90
$3,606	$3,608	$3,347	Average total aid (includes all sources except relatives)
20.4	19.8	10.5	% who received a Pell grant
$1,435	$1,522	$1,326	Average amount of Pell grant
4.6	4.7	3.0	% who received a Supplemental Educational Opportunity Grant
$642	$644	$612	Average amount of SEOG
4.8	5.5	4.4	% who received a federal CWS award
$1,248	$1,398	$1,526	Average amount federal College Work Study award
4.3	6.2	1.4	% who received a Perkins loan
$1,224	$1,115	$1,948	Average amount of Perkins loan
15.8	17.6	13.6	% who received a Stafford loan
$2,317	$2,249	$2,217	Average amount of Stafford loan
1.3	1.8	.5	% whose parent received PLUS loan
$3,272	$3,411	$3,175	Average amount of PLUS loan
2.1	1.1	3.1	% who received a Supplemental Loan for Students (SLS)
$2,447	$2,667	$2,546	Average amount of SLS
29.2	29.6	21.3	% who received any federal aid (includes all types)
$3,042	$3,198	$3,087	Average amount of federal aid
14.9	15.7	7.4	% who received any institutional aid
$2,049	$1,702	$2,066	Average amount of institutional aid
12.8	13.8	3.1	% who received any State aid
$1,320	$1,283	$896	Average amount of State aid
36.2	34.0	18.5	% who received any grants
$2,257	$2,255	$2,236	Average amount of grants
18.8	21.8	16.4	Percentage who received any loans
$2,799	$2,520	$2,679	Average amount of loans
4.3	4.8	3.1	% who received any work-study
$1,058	$1,225	$962	Average amount of work-study

** indicates too few sampled students for estimate.
+ indicates too few sampled students for stable estimate.

BEST COPY AVAILABLE

APPENDIX C
Report on "SYSTEM EDIT RESULTS"

EDIT PROCESS: SYSTEM EDIT RESULTS

IPED Number: Institution Name:
Prepared: mm/dd/yy hh.mm.ss
Edit Status: FAILED
Problem with the Financial Aid Award Section: YES/NO

Total Student Sample: xxx
Eligible Students: xxx
Ineligible Students: xxx

1. MISSING ENTRY FOR ALL ELIGIBLE STUDENTS

	Status
a. Date of Birth	xxxx
b. Gender	xxxx
c. High school degree	xxxx
d. Hispanic Origin	xxxx
e. Race / ethnicity	xxxx
f. Citizenship	xxxx
g. SAT Scores Available	xxxx
h. ACT Scores Available	xxxx
i. Field of Study	xxxx
j. Total length of program in clock/contact hours	xxxx
k. Graduation date for B&B students	xxxx

2. MISSING HARD AND SOFT CRITICAL DATA FOR ANY ELIGIBLE STUDENT

	Status	Missing
a. No valid telephone numbers	xxxx	xxx (%)
b. Applied for aid (E2=Y); Pell budget is blank	xxxx	xxx (%)
c. Applied for aid (E2=Y); Instit budget is blank		
d. Awarded financial aid is blank (E1)	xxxx	xxx (%)
e. Applied for financial aid is blank (E2)	xxxx	xxx (%)
f. Awarded aid (E1=Y), but financial aid questions are blank (E3 & E4 & E5 & E6 & E7)	xxxx	xxx (%)
g. Awarded aid (E1=Y); data not entered into the output form.	xxxx	xxx (%)
h. Blank info for (AGI and EFC), dependency status, or federal financial aid.	xxxx	xxx (%)

3. MISSING LARGE SECTIONS OF DATA FOR ANY ELIGIBLE STUDENT

	Status	Missing
a. At least one section marked EMPTY	xxxx	xxx (%)
b. Enrolled in a term, but attendance, tuition, and type are blank	xxxx	xxx (%)
c. Budget information available; no specific dollar amounts		
e. Eligible student not enrolled in terms during the study year	xxxx	xxx (%)
d. Awarded financial aid; no specific dollar amounts		

APPENDIX D
Variables With Imputations for Missing Values

The imputations performed on seven variables that contained missing values are described in the following paragraphs. A comparison of the pre- and post-imputation values for these variables is shown below.

Expected Family Contribution (EFC)

Expected Family Contribution for undergraduates

There are four derived variables with values for the expected family contribution (EFC) in NPSAS:93:

EFC1 is the federal Family Contribution value as recorded from institutional records in CADE or from federal Pell Grant and Student Loan files. A recorded value was available for 49% of the sample. Because the EFC frequently changes over the course of the year (data changes resulting from verification, use of professional judgement by financial aid officers, changes in student circumstances, etc.) these values were not always consistent (CADE and the Pell file values agreed in 80% of overlapping cases; CADE and Loan file values agreed in 53%). If more than one was available, the order of priority was: CADE, Pell file, ED loan file.

EFC2 is an estimated value calculated using the federal 1992-93 Congressional Methodology (CM) formulas with data for the components taken from any available source (CADE, CATI, Pell files). Values were only calculated if a dollar value (rather than an estimated range) was available for income and a sufficient number of component data elements were available for credible results (58%). The recorded EFC1 and the calculated EFC2 agreed within $500 for 75% of the cases where both values were available.

EFC3 is an imputed value based on regression equations.

EFC4 is the composite EFC value which represents the best estimate according to the following order of priority: First, the recorded EFC1 was used if available and if the value was consistent with the student budget and the amount of need-based aid received. If not, the formula calculation EFC2 was used. If EFC2 was not available or not consistent with the amount of need-based aid received, then the regression-based EFC3 was used. If EFC3 was too high to be consistent with the amount of need-based aid, it was adjusted downward so that the need after aid was equal to zero (in 1.1% of the cases).

Sources:	Source for EFC1 values		Source for EFC2 components	
	Frequency	Percent	Frequency	Percent
N93 CADE	21670	41.1	15259	29.0
Pell file	3185	6.0	8659	16.4
Student loan file	986	1.9	0	0.0
N93 Student Cati	0	0.0	5207	9.9
Parent CATI	0	0.0	1544	2.9
Missing	26856	51.0	22028	41.8
Total Undergraduates	52697	100.0	52697	100.0

Sources:		Source for EFC4 Composite	
		Frequency	Percent
Recorded	(EFC1)	23884	45.3
CM Formula	(EFC2)	8463	16.1
Regression	(EFC3)	15673	29.7
Adjusted	(EFC3)	575	1.1
Missing		4102	7.8
Total undergraduates		52697	100.0

Imputation of EFC3 by regression

The sample for the regression estimates was limited to cases which met the following conditions:

(1) The source of the reported EFC1 was the FAFNAR. This was the only form in CADE which reported the Parental and Student Contributions separately for dependent applicants.

(2) The EFC2 value calculated using the formula was within $500 of the reported EFC1. This was to eliminate cases where there were major differences due to professional judgement or other data inconsistencies.

Eight separate sets of equations were run, depending on the number of basic data elements available for the EFC calculation (income, assets, family size) and the dependency status of the student. For dependent students the Parental (PC) and the Student Contributions (SC) were estimated separately.

Each of the eight sets actually consisted of two equations:

(1) A logistic regression to predict whether the value should be set to zero or the minimum values assigned by the methodology. ($1200 for single independents; $700 or $900 for the dependent student contribution). Logistic regression was used to minimize regression bias stemming from truncated dependent variables.

(2) A least squares regression to predict those values greater than zero or above the minimum.

The table below shows the percentage of cases in which the logistic regression correctly predicted a minimum value and the R squared from the least squares regression which predicts the values greater than zero:

Dependent vars:	Independent Vars:	Minimum Value predicted correctly	R square of values above the minimum
Parental Contribution (PC)	income, family size, assets	92%	.91
	income, family size	92%	.84
	income only	90%	.83
Dependent Student Contribution (SC)	student income & student income squared	87%	.88
Single Independent Student EFC	student income	93%	.93
Independent Students with Dependents EFC	income, income sqd, family size, assets	95%	.87
	income, income sq. family size	95%	.87
	income, income sq.	95%	.86

The equations were tested on a sample of cases which met the same conditions as above, but where the source of the recorded EFC was the federal SAR. The EFC for dependent students was calculated by dividing the predicted PC by the number of family members in postsecondary education and adding the predicted SC (set to the minimum of $700 for first year students and $900 for others). For single independent students predicted minimum values were set to $1200. The overall correlation of the reported EFC with the predicted EFC was .81. There was an absolute difference of $200 or less in 25% of the cases, $500 or less in 40%, and $1000 or less in 50% of the cases.

A comparison of the distribution of the four EFC values is shown below:

EFC Value	EFC1 Recorded N	%	EFC2 CM Formula N	%	EFC3 Regression N	%	EFC4 Composite N	%
0- 699	6120	11.6	6642	12.6	5590	10.6	7454	14.1
700-900	2573	4.9	960	1.8	2141	4.1	2896	5.5
901-1200	2640	5.0	2043	3.9	2540	4.8	3156	6.0
1201-1999	2738	5.2	2587	4.9	3643	6.9	4256	8.1
2000-3999	4949	9.4	5059	9.6	11762	22.3	10601	20.1
4000-5999	2683	5.1	3528	6.7	7040	13.4	5472	10.4
6000-7999	1408	2.7	2413	4.6	5088	9.7	3472	6.6
8000-9999	878	1.7	1656	3.1	3554	6.7	2781	5.3
10000-14999	1039	2.0	2621	5.0	3009	5.7	3544	6.7
15000-19999	424	.8	1216	2.3	2461	4.7	2140	4.1
20000-hi	389	.7	1944	3.7	2132	4.0	2823	5.4
Missing	26856	51.0	22028	41.8	3737	7.1	4102	7.8
Total	52697	100.0	52697	100.0	52697	100.0	52697	100.0

Mean Values of EFC Variables for Undergraduates
by Dependency Status and Income in NPSAS:93

DEPEND2/ INCOME	Total CADE EFC N	EFC1 Reported Mean	EFC2 CM Formula Mean	EFC3 Regression Mean	EFC4 Composite Mean
Dependent					
Less than $10,000	1903	1318	1705	1621	1739	1808
$10-$19.9 K	2795	1963	1931	2040	2220	2018
$20-$29.9 K	3090	2026	2742	3351	4171	3150
$30-$39.9 K	3144	1646	4005	5164	5727	4665
$40-$49.9 K	3411	1351	5438	7066	6666	6131
$50-$59.9 K	3841	1050	7677	9657	7727	7965
$60-$69.9 K	2679	695	9880	12235	8845	9700
$70-$79.9 K	1334	393	11865	15553	14712	14595
$80-$99.9 K	1524	381	15333	19774	17454	18212
$100 K or more	1965	213	23034	39608	31576	35658
Missing income	1897	31	2265	-	-	2265
Total Dependent	27583	11067				
Single Independent						
Less than $5,000	2772	1874	1764	1787	1791	1734
$5-$9.9 K	2554	1599	2975	3713	3380	3066
$10-$19.9 K	3027	933	4623	7461	4984	5730
$20-$29.9 K	1543	170	5888	13665	6867	10138
$30-$49.9 K	558	40	6929	20237	8610	16190
$50 K or more	90	11	12528	41479	12729	32892
Missing income	76	11	1177	-	-	1177
Total	10620	4638				
Independent with dependents						
Less than $5,000	1942	1292	361	171	50	288
$5-$9.9 K	2198	1444	412	185	210	322
$10-$19.9 K	2870	1555	438	294	756	509
$20-$29.9 K	2202	846	1126	1120	1581	1295
$30-$49.9 K	3496	650	2758	3365	2685	2722
$50 K or more	1773	178	7310	11011	9618	9705
Missing income	13	0	-	-	-	-
Total	14494	5965				

EFC for Graduate students

Expected Family Contributions for graduate and first professional students were derived following the same procedures outlined above for undergraduates. Separate sets of regressions were run, with similar results. Graduate students were less likely to have financial aid application records and only 10% filed as dependent students.

EFC4

Source:	Composite N	Composite %
Recorded (EFC1)	3009	22.5
CM Formula (EFC2)	3964	29.6
Regression (EFC3)	4747	35.4
Adjusted (EFC3)	160	1.2
Missing	1519	11.3
Total graduate	13399	100.0

EFC Value	EFC1 Recorded N	EFC1 Recorded %	EFC2 CM Formula N	EFC2 CM Formula %	EFC3 Regression N	EFC3 Regression %	EFC4 Composite N	EFC4 Composite %
0-699	552	4.1	459	3.4	653	4.9	685	5.1
700-900	85	.6	58	.4	176	1.3	140	1.0
901-1200	940	7.0	2819	21.0	1030	7.7	2457	18.3
1201-1999	572	4.3	598	4.5	753	5.6	946	7.1
2000-3999	796	5.9	919	6.9	3948	29.5	2779	20.7
4000-5999	492	3.7	689	5.1	2106	15.7	1431	10.7
6000-7999	283	2.1	524	3.9	986	7.4	561	4.2
8000-9999	195	1.5	373	2.8	654	4.9	417	3.1
10000-14999	340	2.5	725	5.4	465	3.5	916	6.8
15000-19999	124	.9	426	3.2	552	4.1	818	6.1
20000-hi	177	1.3	550	4.1	377	2.8	730	5.4
Missing	8843	66.0	5259	39.2	1699	12.7	1519	11.3
Total graduate	13399	100.0	13399	100.0	13399	100.0	13399	100.0

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Student Cost Variables

Student-reported costs for undergraduates

In the CATI respondents were asked to estimate dollar amounts for the following components of their non-tuition costs in the 1992-3 academic year:

Total amounts directly related to education for:
Books and supplies
Other equipment (computers, microscopes,etc)
Commuting costs (bus fare, gas, parking, etc)
Other education expenses (dependent care, travel home)

Total amount for school-owned housing

Average monthly living expenses (excluding the above) for:
Housing (rent, mortgage, utilities)
Food/meals
Transportation (car expenses)
Personal expenses
Dependent care
Other expenses
Repayment of educational loans

Complete responses were available for 67% of undergraduates and 73% of graduate students. Imputations of costs were done for 31% of the undergraduates. Graduate student costs were not imputed.

All of the direct educational expenses were summed in the variable EDCOST, the direct cost of education other than tuition and fees. The average values for undergraduate respondents were calculated by institutional type and attendance intensity (ATTNSTAT) and used to impute values for non-respondents.

All of the monthly living expense components were summed and averages calculated by dependency status and local residence for each institution; these averages were used to impute the monthly expenses for undergraduates matching the same dependency/residence characteristics at the institution. The minimum value was set at $100 per month.

The average monthly living expenses were multiplied by the number of months that the student was enrolled during the NPSAS year (ENLEN) to get an estimated total amount for the period of enrollment. This total plus any amount paid for school-owned housing was included in LIVEXPUN, the unadjusted household expenses while enrolled. The total unadjusted student-reported non-tuition expenses (SRNONTUN) are the sum of the direct educational expenses and the total living expenses (SRNONTUN=EDCOST+LIVEXPUN).

The unadjusted amount LIVEXPUN assumes that the entire household expenses (including the expenses of a spouse and children) of independent students can be attributed to educational costs while the student is enrolled, even though the student may only be taking one
or two courses. Among independent students with dependents, the unadjusted living expenses are directly related to income and inversly related to attendance intensity; that is, the higher the income, the higher the living expenses, and the less likely a student
is attending full-time.

Therefore an attendance-adjusted household expense LIVEXPAJ was estimated by including only 75% of the monthly amount during months that the student was enrolled at least half-time but less than full-time (MHT) and only 25% during months that the student was enrolled less than half-time (MPT). For married students only 50% of the household costs were included. The attendance-adjusted non-tuition costs (SRNONTAJ) are therefore the direct educational expenses plus a part of the monthly household expenses in proportion to the attendance intensity (SRNONTAJ= EDCOST+LIVEXPAJ).
Total student-reported costs were calculated as the sum of the tuition and fees charged (TUITION) plus the unadjusted or adjusted non-tuition costs described above. The unadjusted student-reported cost is TOTCOSTU (=TUITION+SRNONTUN), while the attendance-adjusted student-reported cost is TOTCOSTA(=TUITION+SRNONTAJ). If these total cost values were less than the amount of financial aid received by
the student, the non-tuition component was adjusted upwards so that the total cost values were equal to the total aid. That is, it was assumed that student-reported estimates of cost were not as reliable as aid amounts reported by institutions, and that financial aid
awards would not be greater than reasonable estimates of actual educational costs represented by the student budgets. CATI respondents' non-tuition estimates were adjusted upwards for 3.7% of the undergraduates and 7% of the graduate students.

Sources for Unadjusted Total Costs (TOTCOSTU)

	Undergraduates		Graduate/1Prof	
Source:	N	%	N	%
Student CATI	33472	63.5	8808	65.7
Imputed	16568	31.4	0	0.0
CATI adjusted	1961	3.7	938	7.0
Missing	696	1.3	3653	27.3
Total	52697	100.0	13399	100.0

Sources for Total Cost Variable TOTCOSTU
Undergraduates NPASAS:93

SECTOR_B	Count / Row Pct	Student CATI	Imputed	Adjusted CATI	Missing	Row Total
1.00 Public, less 2		775	370	37	34	1216
		63.7	30.4	3.0	2.8	2.3
2.00 Public, 2 year		4473	1723	189	46	6431
		69.6	26.8	2.9	.7	12.2
3.00 Public, non-PhD-4		7238	2727	434	76	10475
		69.1	26.0	4.1	.7	19.9
4.00 Public, PhD-4 yr		9981	3731	597	118	14427
		69.2	25.9	4.1	.8	27.4
5.00 Private, 2 years		711	521	33	74	1339
		53.1	38.9	2.5	5.5	2.5
6.00 Private, non-PhD		4212	2803	307	118	7440
		56.6	37.7	4.1	1.6	14.1
7.00 Private, PhD		2594	1420	168	56	4238
		61.2	33.5	4.0	1.3	8.0
8.00 Private, FP lt 2		2688	2547	139	129	5503
		48.8	46.3	2.5	2.3	10.4
9.00 Private, FP, 2 yr		800	726	57	45	1628
		49.1	44.6	3.5	2.8	3.1
Column Total		33472	16568	1961	696	52697
		63.5	31.4	3.7	1.3	100.0

Average Self-reported Costs for Undergraduates
Before and after imputation and adjustments
By Institutional Type, Attendance, Dependency and Local Residence

SECTOR_B Institution type	N	Unadjusted Non-Tuition Cost (SRNONTUN) From CATI	Unadjusted Non-Tuition Cost (SRNONTUN) After Imputation	Unadjusted Total Cost (TOTCOSTU) From CATI	Unadjusted Total Cost (TOTCOSTU) After Imputation	Attendance Adjusted Total Cost (TOTCOSTA) After Adjustment
1 public lt 2	1216	7,611	7,037	8,395	7,941	6,813
2 public 2 yr	6431	7,793	7,345	8,535	8,063	5,747
3 public 4 yr non phd	10475	8,158	7,671	10,032	9,592	8,571
4 public 4 yr phd	14427	7,938	7,522	10,498	10,157	9,458
5 private nfp lt 4	1339	8,704	7,499	11,507	10,775	9,014
6 private nfp 4 non phd	7440	8,423	7,610	15,381	15,025	14,126
7 private nfp 4 phd	4238	8,544	7,982	18,575	18,096	17,488
8 private for-pr lt 2	5503	7,395	6,624	12,042	11,137	10,742
9 private for-pr 2+	1628	8,080	6,830	13,333	11,591	11,106
Attendance						
FT/FY	22836	8,930	8,324	14,121	13,889	13,889
FT/PY	9963	5,239	5,000	8,467	8,354	8,344
PT/FY	9949	10,722	10,136	13,009	12,527	9,238
PT/PY	9173	5,390	5,165	6,524	6,327	4,362
Missing	776	8,092	4,955	11,175	9,533	7,303
Dependency/local residence						
Dependent						
On campus	8240	7,776	6,888	14,687	14,029	13,933
Off campus	10890	7,753	7,434	11,912	11,671	11,200
With parents/other	8453	5,150	4,863	8,090	8,032	7,590
Single Independent						
On campus	837	8,046	7,130	12,978	12,092	11,799
Off campus	7285	8,589	7,999	11,225	10,700	9,275
With parents/other	2498	5,962	5,722	8,697	8,447	7,516
Independent with dependents						
On campus	365	10,428	9,207	14,255	13,068	12,621
Off campus	12549	10,300	9,664	12,533	12,069	9,911
With parents/other	1580	7,241	6,689	10,092	9,621	8,577

Student Budget Variables for Undergraduates

Complete information on student budgets using the Congressional Methodology rules was available in CADE for 33% of the undergraduates in the sample, 95% of whom were awarded financial aid.

Of those who received aid, about half (52%) had a recorded student budget, while only 4% of those who received no aid had a budget. Student budgets were imputed for 40% of the aided undergraduates and 90% of the unaided. The 5% of students who attended more than one institution during the year or whose status changed from undergraduate to graduate during the year were excluded, since they would have had two budgets. The proportion of imputed budgets data was highest at the less than 4-year public institutions (80%) and for students with part-time part-year attendance (81%).

The imputation strategy was to calculate the average full-time full-year tuition and non-tuition budget components for categories of students at each institution and then to assign these average values to individual cases with the same characteristics. The tuition component (TUITBGFT) was taken either from the amount in the reported budgets of full-time students or the amount of tuition actually charged (TUITION) full-time students, as reported in CADE or (rarely) CATI. Average full-time tuition amounts were calculated for each institution and assigned to all students in the institution with missing budget data. If the actual tuition paid was greater than the reported or imputed budget tuition, the budget tuition amount was raised to the actual tuition amount.

Similarly, all standard non-tuition items (SBNONTUN) reported in the budgets (books and supplies, room and board, transportation and personal) were summed and averages calculated for all combinations of dependency (dependent, single independent, independent with dependents) and local residence (on campus, off campus, with parents), both for individual institutions and aggregated for types of institutions. Cases with missing non-tuition values were assigned the average value for the matching dependency/local residence characteristics at the institution attended. If this was not available, cases were assigned the average value by dependency/local residence for all institutions of that type.

The total full-time student budget (BUDGETFT) was imputed as the sum of the full-time tuition and non-tuition values. If the imputed budget value was less than the amount of aid received, it was raised to equal the aid (TOTAID) by increasing the non-tuition component (SBNONTUN). In 1.6% of the cases the budget total reported in CADE was also adjusted upwards to equal the aid amount.

Source for Full-Time Student Budgets by Institution Type

Count / Row Pct	N93 CADE	Imputed	N93 CADE adjusted	Missing	Total Row
Public,lt 4-yr	1125 14.7	5988 78.3	21 .3	513 6.7	7647 14.5
Public, 4-year	7599 30.5	15280 61.4	562 2.3	1461 5.9	24902 47.3
Private, nfp 2-yr	542 40.5	740 55.3	4 .3	53 4.0	1339 2.5
Private,nfp 4-yr	4732 40.5	6035 51.7	242 2.1	669 5.7	11678 22.2
Private, for-prof	2764 38.8	4136 58.0	16 .2	215 3.0	7131 13.5
Column Total	16762 31.8	32179 61.1	845 1.6	2911 5.5	52697 100.0

Source for Full-Time Student Budgets by Attendance Status

ATTNSTAT / Count / Row Pct	N93 CADE	Imputed	N93 CADE adjusted	Missing	Row
FT/FY:1 inst	9653 44.6	11311 52.3	678 3.1	5 .0	21647 41.1
FT/PY	3368 33.8	6348 63.7	54 .5	193 1.9	9963 18.9
PT/FY:1 inst	2442 27.2	6449 71.7	88 1.0	10 .1	8989 17.1
PT/PY	1246 13.6	7398 80.6	24 .3	505 5.5	9173 17.4
2+ institutions or missing	53 1.8	673 23.0	1 .0	2198 75.1	2925 5.6
Column Total	16762 31.8	32179 61.1	845 1.6	2911 5.5	52697 100.0

Attendance-adjusted student budgets (BUDGETAJ) were estimated asfollows. The tuition component used the actual tuition charged (TUITION), which reflects differences in attendance patterns. The full-time non-tuition component (SBNONTUN) of the budget was adjusted to reflect less than half-time and less than full-year (9 months) attendance. For each case SBNONTUN was multiplied by the percentage of months enrolled half-time or more (HFT=months full-time plus months greater than half-time divided by total months enrolled) and the percentage of the academic year enrolled (PYADJUST=1 for those enrolled 9 months or more, otherwise =months enrolled/9). Then BUDGETAJ=TUITION+(SBNONTUN*HFT*PYADJUST). For students attending only less than half-time, the adjusted budget is equal to tuition only (HFT=0); for those enrolled 9 months or more full-time, the adjusted budget includes the full-time non-tuition amount; those with mixed attendance patterns have some fraction of the non-tuition amount included.

For graduate and first-professional students only budgets reported in CADE are included, and no imputations of full-time budgets were done. The attendance-adjusted student budgets were determined following the same procedure as for the undergraduates.

Total income in calendar year 1991.

Income is a critical variable for financial aid analyses. Income determines, in large part, expected family contribution, and so obtaining accurate and complete estimates of income for both dependent and independent students is of critical importance in NPSAS. This report describes the sources of income information in NPSAS:93, the completeness of this information, and the imputation strategy used to estimate income for respondents who either could not or would not answer the income questions.

Sources

Income data could be obtained from a variety of sources. For dependent and independent students who applied for financial aid, income could be obtained from financial aid forms (e.g., SAR, GAPSFAS, CFAR, etc.), from official Department of Education data bases, including the Pell recipient file and the federal student loan file ("tape dump").

In addition to these institutional sources, the NPSAS:93 student and parent CATI instruments contained questions about individual and family income. These latter sources, based on results from NPSAS:90, asked for income data in two ways. First, respondents were asked to provide an open-ended response. For those respondents who could not or would not answer the open-ended income questions, a second approach was used. Close-ended follow-up questions, which allowed respondents to choose from among a set of income categories, were asked (e.g., "Would you estimate your (parent's) total yearly income in 1991/92 1) $30,000 or more, or 2) less than $30,000?" Depending on which answer was selected, respondents were asked a follow-up series that tried to specify more precisely the range within which total family income fell (e.g., "at least 30,000 but less than $50,000," etc.). Table D-1 shows the source for the income variable for dependent undergraduate and graduate/first professional students, whileTable D-2 shows the same information for independent students.

Table D-1. Percentage of dependent students whose parental income value came from different sources, by student level, NPSAS:93.

	CADE	Pell	Loan File	Parent CATI	Student CATI (open-ended)	Parent CATI (categorical)	Student CATI (categorical)	Total (N)
Undergraduate	48.2	3.3	2.1	18.5	15.3	5.4	7.1	(22,124)
Graduate/1FP	35.0	.2	5.7	0.0	43.5	0.0	15.6	(902)

Note: Excludes cases with missing values on all sources.

Table D-2. Percentage of independent students whose income value came from different sources, by student level, NPSAS:93.

	CADE	Pell	Loan File	Student CATI (open-ended)	Student CATI (categorical)	Total (N)
Undergraduate	54.0	4.6	1.3	36.7	3.5	(21005)
Graduate/1FP	38.6	0.1	2.5	55.0	3.8	(8752)

Note: Excludes cases with missing values on all sources.

Even with these multiple sources, several difficulties emerged with the 1993 data. First, there were differences in the way income was reported in the CADE and CATI instruments. The CADE (institutional) data came from the financial aid applications, and reported adjusted gross income and various categories of untaxed income separately. The CATI questions asked respondents to provide "total yearly income" because other studies showed that respondents were unable to provide reliable responses to a detailed breakdown of types of income received almost two years earlier. In order to provide comparable information, "total yearly income" was created for respondents who had CADE data by adding the AGI and untaxed income.

Second, the income ranges for those respondents who provided only a categorical estimate of their own or their family income, were too large to provide a meaningful number that could be used for computing an estimated expected family contribution. This necessitated estimating a specific value within the selected income interval. In past NPSAS studies, the midpoint of the range was used. This approach leads to a certain "lumpiness" in the distribution, since all cases falling within a particular interval are assigned the midpoint. For NPSAS:93,

respondents who chose one of the categorical responses for income were randomly assigned a value within the range they selected.[1]

Third, even after searching among all the possible sources of income information, a large percentage of cases (about 18 percent of undergraduates and 28 percent of graduate/first professional students) were still missing income. For these respondents, total income was inputed using multiple regression. Regression equations were estimated separately by student level (undergraduate versus graduate/first professional students) and dependency status (dependent/independent). The samples used to estimate income were limited to those whose total income was $150,000 or less. The variables included in the regression estimation equations and the adjusted R^2 were:

Independent undergraduates (R^2 = .53)—Total financial aid received; average total income for independent students attending the same institution; age; age squared; dummy variable for part-time, part-year attendance; a dummy variable for being married; Pell grant amount; dummy variables for institutional control (private, not-for-profit, and private, for-profit) and dummy variables for the interaction of age with part-time, full-year attendance at one institution; and the interaction of age with part-time, part-year attendance.

Dependent undergraduates parental income (R^2 = .37)—Total financial aid received; Pell grant amount; average total income for dependent students attending the same institution; dummy variables for attendance status (full-time, part-year; part-time, full-year at one institution; and part-time, part-year); dummy variables for living with parents, or with relatives, while attending school; dummy variables for institutional level (two- to -three-year, and less-than-two-year); institutional control (private, not-for-profit, and private, for-profit); and dummy variables for region of the country based on OBE region (far west, and "outlying").

Independent graduate and first-professional students (R^2 = .49)—Total financial aid received; average total income for independent students attending the same institution; age; age squared; gender; dummy variables for marital status (married, and separated); Stafford loan amount; full-time, part-year attendance; dummy variable for attendance at a private, not-for-profit institution; and a dummy variable for a refined dependency status (independent with no dependents).

Dependent undergraduate and first-professional students (R^2 = .29)— Total financial aid received; average total income for dependent students attending the same institution; Stafford loan amount; and a dummy variable for graduate or first-professional status.

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[1] Initial plans were to assign categorical responses to unique values for a continuous income variable randomly based on the empirical distribution of responses to the open-ended income questions that fell within the bounds of the categorical response. However, about 70 percent of those providing open-ended values gave numbers that fell on $5,000 boundaries (e.g., $40,000, $45,000, etc.). Consequently, categorical responses were assigned to the $5,000 amounts within a categorical range.

The regression estimates substantially increased the proportion of valid responses. The number of missing cases decreased from 13,313 (20.1 percent of the entire NPSAS sample) to 2,250 (3.4 percent).

Tables D- 3 and D-4 show how the distribution of total income changed as a consequence of the imputations. For both dependent and independent students, the effect of imputing missing incomes was to shift the distribution to the upper income ranges.

Table D-3. Percentage distribution of total income for combined graduate and undergraduate samples, by dependency status, before and after imputation: NPSAS:93.

	Pre-Imputation		Post-Imputation	
	%	N	%	N
Dependent: 0-9999	8.2%	1,893	7.3%	1,962
Dependent: 10000-19999	12.2%	2,814	10.6%	2,863
Dependent: 20000-29999	13.5%	3,114	11.9%	3,189
Dependent: 30000-39999	13.1%	3,013	12.1%	3,255
Dependent: 40000-49999	12.1%	2,794	13.3%	3,566
Dependent: 50000-59999	10.8%	2,482	14.9%	4,001
Dependent: 60000-69999	8.7%	2,002	10.5%	2,819
Dependent: 70000-79999	5.3%	1,217	5.4%	1,448
Dependent: 80000-99999	6.8%	1,568	6.1%	1,640
Dependent: 100k or more	9.2%	2,129	8.0%	2,151
	100.0%	23,026	100.0%	26,894
Independent: 0-5000	20.1%	5,985	17.4%	6,426
Independent: 5000-9999	18.5%	5,495	16.1%	5,937
Independent: 10000-19999	20.5%	6,104	21.5%	7,931
Independent: 20000-29999	13.1%	3,898	15.4%	5,702
Independent: 30000-49999	15.8%	4,699	18.9%	6,971
Independent: 50k or more	12.0%	3,576	10.8%	3,985
	100.0%	29,757	100.0%	36,952

Note: Columns exclude missing values.

This is expected, since low income students were more likely than higher income students to apply for aid, and so were more likely to have an income reported in institutional records (CADE) or in Education Department files. Higher income students' incomes were more likely to come from the Student or Parent CATI, which had a a higher percentage of missing values than either the CADE or Education Department data.

Table D-4. Cumulative distribution of total income for combined graduate and undergraduate samples, by dependency status, before and after imputation: NPSAS:93.

	Pre-Imputation		Post-Imputation	
	%	N	%	N
Dependent: 0-9999	8.2%	1,893	7.3%	1,962
Dependent: 10000-19999	20.4%	4,707	17.9%	4,825
Dependent: 20000-29999	34.0%	7,821	29.8%	8,014
Dependent: 30000-39999	47.1%	10,834	41.9%	11,269
Dependent: 40000-49999	59.2%	13,628	55.2%	14,835
Dependent: 50000-59999	70.0%	16,110	70.0%	18,836
Dependent: 60000-69999	78.7%	18,112	80.5%	21,655
Dependent: 70000-79999	83.9%	19,329	85.9%	23,103
Dependent: 80000-99999	90.8%	20,897	92.0%	24,743
Dependent: 100k or more	100.0%	23,026	100.0%	26,894
Independent: 0-5000	20.1%	5,985	17.4%	6,426
Independent: 5000-9999	38.6%	11,480	33.5%	12,363
Independent: 10000-19999	59.1%	17,584	54.9%	20,294
Independent: 20000-29999	72.2%	21,482	70.4%	25,996
Independent: 30000-49999	88.0%	26,181	89.2%	32,967
Independent: 50k or more	100.0%	29,757	100.0%	36,952

Note: Columns exclude missing values. Table D-5 includes missing values.

Table D-5. Cumulative distribution of total income for combined graduate and undergraduate samples, including missing values, by dependency status, before and after imputation: NPSAS:93.

	Before	After
Missing	20.1%	3.4%
Dependent: 0-9999	2.9%	3.0%
Dependent: 10000-19999	4.3%	4.3%
Dependent: 20000-29999	4.7%	4.8%
Dependent: 30000-39999	4.6%	4.9%
Dependent: 40000-49999	4.2%	5.4%
Dependent: 50000-59999	3.8%	6.1%
Dependent: 60000-69999	3.0%	4.3%
Dependent: 70000-79999	1.8%	2.2%
Dependent: 80000-99999	2.4%	2.5%
Dependent: 100k or more	3.2%	3.3%
Independent: 0-5000	9.1%	9.7%
Independent: 5000-9999	8.3%	9.0%
Independent: 10000-19999	9.2%	12.0%
Independent: 20000-29999	5.9%	8.6%
Independent: 30000-49999	7.1%	10.5%
Independent: 50k or more	5.4%	6.0%
Total (N=66,096)	100.0%	100.0%

Race/ethnicity of the student.

Sources

The variable describing student's race has been derived from a number of sources. Race and ethnicity (Hispanic or non-Hispanic) were included in the CADE record abstract software and field data collectors attempted to gather this information from administrative records maintained by the institutions. Data recorded in CADE were loaded into the CATI instrument for verification during the telephone interview with students. If information on race or ethnicity was not collected during the institution survey, students were asked for this information during the telephone interview.

Among the undergraduate and graduate student survey data records that qualified for the final analysis files, about 25 percent were missing information on race and ethnicity (Table 1), mostly because of missing data (23%). Missing data could occur because data on race or ethnicity were not available from the institution and the question was not asked of the respondent during the telephone interview, either because a break-off occurring before these items were asked or because an interview was not conducted at all. The frequency of data missing because of refusals or "don't know" responses was quite low (0.6% and 0.1% respectively).

Imputation

Because of the importance of race and ethnicity as analytic variables, data missing for any of these reasons was imputed. Typical imputation methods such as regression or hotdeck were considered, however, these methods require data from other variables in the imputation models. For the most part, data on race and ethnicity were missing because of an incomplete student interview so that data for other variables were missing as well. For this reason, these methods were not practical. Imputation followed a three-step process that resulted in the Post-Imputation frequency distribution in Table 1.

Undergraduate Students		
Categories	Pre-Imputation	Post-Imputation
White	30,041	42,912
Black	4,262	4,280
American Indian/Alaskan Native	386	401
Asian	1,468	1,771
Hispanic	3,324	3,333
Refusal	272	0
Don't Know	65	0
Missing	12,049	0

Graduate/First Professional Students		
Categories	Pre-Imputation	Post-Imputation
White	8,146	11,317
Black	619	619
American Indian/Alaskan Native	77	77
Asian	852	852
Hispanic	535	535
Refusal	104	0
Don't Know	20	0
Missing	2,863	

First, the verbatim fields for the "Other, specify" categories of the two items were scanned and recoded, if possible. In many of these verbatim responses, the student indicated mixed ancestry (e.g., "Black Hispanic" or "Hispanic-Indian"). In these instances, the race variable and the ethnicity variable were updated accordingly. Race/ethnicity for 80 records was determined by this method.

Second, if the student attended one of the historically Black colleges and universities (HBCUs), missing race data was recorded to "Black." Records for 400 students were recoded in this way. The frequency of known student race among these colleges (Table 2) shows that 1,141 undergraduate and graduate students attended HBCUs and that 79% of these students were Black.

Third, race/ethnicity was imputed using Census track information linked to each student record using the student's home address. In the imputation procedure, the student was assigned a race/ethnicity corresponding to the race of the majority (more than 50%) of the Census track of the student's home address. Race/ethnicity of 13,279 students was imputed using this rule.

To compare actual to predicted race/ethnicity using this procedure, a predicted value for race/ethnicity was created for those students for whom race/ethnicity was known from either the record abstract or telephone survey data and who had a valid zip code. A comparison of actual and imputed race/ethnicity shows that overall [across graduate students and undergraduates combined], for about 79% of the imputed cases, the reported race was the same. Among the imputed race values, obtained agreement rates between imputed and actual were about 81% for Whites, 57% for Blacks, 39% for American Indian/Alaskan Natives, 64% for Asians, and 99% for Hispanics.

RACE Race (Derived) by RACEZIP Race (Zip imputed)

Filter: Only students with a reported race variable that was used to assign the derived RACE variable were used in this analysis and comparing against the imputed Race using Zipcode information . Race was imputed to a specific value only when 50% or more of the people living in that neighborhood were of the that race.

RACEZIP - Imputed using Zipcode data for Undergraduates

Count / Row Pct / Col Pct / Tot Pct	Unknown zipcode -9	Missing zipcode -7	White 1	Black 2	Amer Ind ian 3	Asian 4	Hispanic 5	Row Total
RACE								
(Cati/Cade) White	1759 5.9 70.2 4.4	2940 9.8 79.0 7.4	24677 82.1 80.5 62.0	627 2.1 26.5 1.6	16 .1 47.1 .0	19 .1 17.1 .0	3 .0 .7 .0	30041 75.5
2 Black	344 8.1 13.7 .9	418 9.8 11.2 1.1	1975 46.3 6.4 5.0	1518 35.6 64.2 3.8	2 .0 5.9 .0	5 .1 4.5 .0		4262 10.7
3 Amer Indian	35 9.1 1.4 .1	28 7.3 .8 .1	289 74.9 .9 .7	19 4.9 .8 .0	13 3.4 38.2 .0	1 .3 .9 .0	1 .3 .2 .0	386 1.0
4 Asian	169 9.6 6.7 .4	115 6.5 3.1 .3	1336 75.6 4.4 3.4	73 4.1 3.1 .2		75 4.2 67.6 .2		1768 4.4
5 Hispanic	200 6.0 8.0 .5	219 6.6 5.9 .6	2361 71.0 7.7 5.9	128 3.9 5.4 .3	3 .1 8.8 .0	11 .3 9.9 .0	402 12.1 99.0 1.0	3324 8.4
Column Total	2507 6.3	3720 9.4	30638 77.0	2365 5.9	34 .1	111 .3	406 1.0	39781 100.0

RACE Race (Cati/Cade Derived) by RACEZIP Race (Zipcode imputed)

Filter: Only students with a reported race variable that was used to assign the derived RACE variable were used in this analysis and comparing against the imputed Race using Zipcode information (File: S93).

RACEZIP - Imputed using Zipcode data for Graduate and First-professional students

RACE	Row Pct / Col Pct / Tot Pct	Unknown -9	Missing Zipcode -7	White 1	Black 2	American Indian 3	Asian 4	Hispanic 5	Row Total
(Cati/Cade) White	1	265	999	6558	308	3	14		8147
		3.3	12.3	80.5	3.8	.0	.2		79.6
		71.8	80.6	82.4	54.6	60.0	35.0		
		2.6	9.8	64.1	3.0	.0	.1		
Black	2	32	98	328	160			1	619
		5.2	15.8	53.0	25.8			.2	6.1
		8.7	7.9	4.1	28.4			1.8	
		.3	1.0	3.2	1.6			.0	
Amer Indian	3	5	5	61	3	2	1		77
		6.5	6.5	79.2	3.9	2.6	1.3		.8
		1.4	.4	.8	.5	40.0	2.5		
		.0	.0	.6	.0	.0	.0		
Asian	4	51	85	633	61		22		852
		6.0	10.0	74.3	7.2		2.6		8.3
		13.8	6.9	8.0	10.8		55.0		
		.5	.8	6.2	.6		.2		
Hispanic	5	16	53	376	32		3	54	534
		3.0	9.9	70.4	6.0		.6	10.1	5.2
		4.3	4.3	4.7	5.7		7.5	98.2	
		.2	.5	3.7	.3		.0	.5	
	Column Total	369	1240	7956	564	5	40	55	10229
		3.6	12.1	77.8	5.5	.0	.4	.5	100.0

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Local residence (housing). Local residence was initially computed from the CATI variables B016 and B019. The verbatim responses for other local residence, B16A, were then used to map "other" responses for local residence into the appropriate categories. CADE data on local residence, Q26A, were then used to determine local residence for students for whom that data were missing in CATI. Next, the CADE locating data (student local and permanent addresses and parents address) were used to determine the local address for some students whose local address was still missing. Finally, institution sector and student age were used to create imputation classes for weighted sequential hot deck imputation for the remaining students with missing data for local residence.

Pre Imputation

LOCRES3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
MISSING	3760	5.7	3760	5.7
1=ON CAMPUS	9970	15.1	13730	20.8
2=OFF CAMPUS	39325	59.5	53055	80.3
3=WITH PARENTS	11786	17.8	64841	98.1
4=WITH RELATIVES	1138	1.7	65979	99.8
5=OTHER	117	0.2	66096	100.0

Post Imputation

LOCALIMP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1=ON CAMPUS	10393	15.7	10393	15.7
2=OFF CAMPUS	41881	63.4	52274	79.1
3=WITH PARENTS	12469	18.9	64743	98.0
4=WITH RELATIVES	1233	1.9	65976	99.8
5=OTHER	120	0.2	66096	100.0

Pell grant amount. Pell grants are awarded to undergraduates who haven't yet received a Bachelor's or first professional degree. They are intended as a financial base, to which other financial aid awards can be added. To be eligible in 1992-93, students must have attended school at least half time. The amount of a Pell grant depends on need, cost of institution, attendance status (i.e. full time or part time, full year or part year). In Award Year 1993-93 the maximum amount was $2400. The NPSAS:93 estimate of the award amount for each student was based on, in order of priority: 1) CADE (institutional data), for which the institution supplied the social security number and NCES the ED Pell grant amount for that social security number; and 2) on CATI (student-reported data). If the institution provided a valid social security number and the student did not provide a different social security number in the CATI (student-reported data), then the ED Pell amount was used. If no award was reported for such a student, PELLAMT was set to zero. Then, the student-reported award amount was used if: 1) the social security number provided by the student appeared usable; or 2) the ED Pell amount was 0, but the student was enrolled in May or June of 1992, and the student- reported award amount was greater than 0. Finally, if the survey provided neither a valid social security number nor Pell award status, the award status was imputed. If the survey indicated that a Pell award was received but did not indicate the amount, or if the student was imputed to be a Pell recipient, then the amount of the award was imputed. Imputation classes were based on year in college, geographic region, and institution level and control.

Pell grant amount--prior to imputation

PELLBEST	Frequency	Percent	Cumulative Frequency	Cumulative Percent
MISSING	440	0.7	440	0.7
0	47866	72.4	48306	73.1
100-399	834	1.3	49140	74.3
400-699	1414	2.1	50554	76.5
700-999	1730	2.6	52284	79.1
1000-1299	2937	4.4	55221	83.5
1300-1599	1336	2.0	56557	85.6
1600-1899	1785	2.7	58342	88.3
1900-2199	1671	2.5	60013	90.8
2200-2399	1372	2.1	61385	92.9
2400	4711	7.1	66096	100.0

Post Imputation

PELLAMT	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	48179	72.9	48179	72.9
100-399	839	1.3	49018	74.2
400-699	1429	2.2	50447	76.3
700-999	1737	2.6	52184	79.0
1000-1299	2962	4.5	55146	83.4
1300-1599	1348	2.0	56494	85.5
1600-1899	1793	2.7	58287	88.2
1900-2199	1683	2.5	59970	90.7
2200-2399	1382	2.1	61352	92.8
2400	4744	7.2	66096	100.0

Final estimate of the Stafford loan amount. If the institution provided a valid social security number and the student did not provide a different social security number in the CATI, then the ED reported award amount was used. If no award was reported for such a student, STAFFAMT was set to zero. Otherwise, the survey-reported award amount was used. Finally, if the survey provided neither a valid social security number nor Stafford award status, the award status was imputed. If the survey indicated that a Stafford award was received but did not indicated the amount, or if the student was imputed to be a Stafford recipient, then the mount of the award was imputed. Imputation classes were based on year in college, geographic region, and institution level and control.Stafford loan

Pre Imputation

STAFFBST	Frequency	Percent	Cumulative Frequency	Cumulative Percent
MISSING	421	0.6	421	0.6
0	45131	68.3	45552	68.9
100-999	974	1.5	46526	70.4
1000-1999	2932	4.4	49458	74.8
2000-2999	7395	11.2	56853	86.0
3000-3999	1583	2.4	58436	88.4
4000-4999	3605	5.5	62041	93.9
5000-5999	742	1.1	62783	95.0
6000-7499	472	0.7	63255	95.7
7500	2841	4.3	66096	100.0

Post- Imputation

STAFFBST	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	45374	68.6	45374	68.6
100-999	979	1.5	46353	70.1
1000-1999	2954	4.5	49307	74.6
2000-2999	7479	11.3	56786	85.9
3000-3999	1596	2.4	58382	88.3
4000-4999	3629	5.5	62011	93.8
5000-5999	750	1.1	62761	95.0
6000-7499	473	0.7	63234	95.7
7500	2862	4.3	66096	100.0

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Class level. Imputation completed year in college distinguishing year 4 from year 5 seniors. Seniors for whom year 4 or year 5 status was unknown based on YEAR5 were imputed to be in either year 4 or year 5 of their undergraduate program based on their major using a weighted sequential hot deck imputation procedure.

Pre-Imputation

YEAR5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1=FRESHMAN	17924	27.1	17924	27.1
2=SOPHOMORE	7696	11.6	25620	38.8
3=JUNIOR	6317	9.6	31937	48.3
4=FOURTH YEAR	16658	25.2	48595	73.5
5=FIFTH YEAR	1986	3.0	50581	76.5
6=SENIOR	656	1.0	51237	77.5
7=UNDGR(LEVEL UN	1460	2.2	52697	79.7
8=GRADUATE	9302	14.1	61999	93.8
9=FIRST-PROF	4097	6.2	66096	100.0

Post -Imputation

YEAR5IMP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1=FRESHMAN	17924	27.1	17924	27.1
2=SOPHOMORE	7696	11.6	25620	38.8
3=JUNIOR	6317	9.6	31937	48.3
4=FOURTH YEAR	17206	26.0	49143	74.4
5=FIFTH YEAR	2094	3.2	51237	77.5
6=UNDGR(LEVEL UN	1460	2.2	52697	79.7
7=GRADUATE	9302	14.1	61999	93.8
8=FIRST-PROF	4097	6.2	66096	100.0

APPENDIX E
SUMMARY STATISTICS AND STANDARD ERRORS

The following summary tables are designed to provide additional information about the data files, and some summary information for those researchers interested in using the analysis file. Standard errors are presented following table E-12.

Summary Table E-1

Numbers of Students by Academic Level and Type of Institution, in Thousands: 1992-93

Academic Level	All Institutions	Type of Institution by Academic Level						
		Undergraduate					Graduate	
		Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Undergraduate	18,478	5,753	8,381	2,637	300	1,427	--	--
Graduate	2,669	--	--	--	--	--	1,594	1,074
All	21,147	5,733	8,381	2,637	300	1,427	1,594	1,074

Summary Table E-2

Numbers of Students by Academic Level and Family Income*, in Thousands: 1992-93

Academic Level	All Incomes	Family Income (adjusted gross income)						
		Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	17,793	2,862	2,960	2,703	2,446	2,328	3,854	639
Graduate	2,613	361	392	453	435	322	578	71
All	20,406	3,223	3,353	3,156	2,881	2,650	4,433	710

*Data on family income is missing for 2,188 students.

Summary Table E-3
Numbers of Students by Dependency Status and Type of Institution, in Thousands: 1992-93

Students	All Institutions	Type of Institution by Academic Level						
		Undergraduate					Graduate	
		Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	9,086	3,602	3,098	1,605	115	438	142	87
Independent	12,060	2,130	5,284	1,033	184	989	1,453	988
All	21,147	5,733	8,381	2,637	300	1,427	1,594	1,074

Summary Table E-4
Numbers of Students by Dependency Status and Family Income*, in Thousands: 1992-93

Students	All Incomes	Family Income (adjusted gross income)						
		Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	8,416	516	824	936	1,147	1,434	2,971	588
Independent	11,990	2,707	2,529	2,219	1,734	1,216	1,462	123
All	20,406	3,223	3,353	3,156	2,881	2,650	4,433	710

*Data on family income is missing for 2,188 students.

Summary Table E-5

Percentages and Numbers of Students Receiving Title IV Aid and Any Aid by Academic Level and Their Distribution by Type of Institution: 1992-1993

Percentages of Students

Academic Level		Overall Percent	Distribution Among Those Receiving Aid						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit Four-year	Private, Not-For-Profit Two-year	Private, For-Profit	Public	Private
Undergraduate	percent Title IV aid	31.0	34.3	26.4	20.4	2.2	16.7	--	--
	percent any aid	41.4	34.2	29.5	20.9	2.1	13.4	--	--
Graduate	percent Title IV aid	18.4	--	--	--	--	--	52.7	47.3
	percent any aid	38.7	--	--	--	--	--	55.5	44.5
All	percent Title IV aid	29.4	31.6	24.3	18.7	2.1	15.4	4.2	3.7
	percent any aid	41.1	30.1	26.0	18.4	1.9	11.8	6.6	5.3

Numbers of Students (in Thousands)

Academic Level			Distribution Among Those Receiving Aid						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Undergraduate	number receiving Title IV aid	5,733	1,965	1,514	1,167	128	960	--	--
	number receiving any aid	7,658	2,616	2,257	1,597	163	1,025	--	--
Graduate	number receiving Title IV aid	490	--	--	--	--	--	258	232
	number receiving any aid	1,034	--	--	--	--	--	574	460
All	number receiving Title IV aid	6,224	1,965	1,514	1,167	128	960	258	232
	number receiving any aid	8,692	2,616	2,257	1,597	163	1,025	574	460

Summary Table E-6

Percentages and Numbers of Students Receiving Title IV Aid and Any Aid by Academic Level and Their Distribution by Family Income*: 1992-93

Percentages of Students

Academic Level		Overall Percent	Distribution Among Those Receiving Aid						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	percent Title IV aid	31.0	35.4	23.2	14.9	9.7	6.9	9.3	0.6
	percent any aid	41.4	28.7	20.6	14.9	11.1	8.7	14.5	1.6
Graduate	percent Title IV aid	18.4	42.7	19.7	12.6	8.9	6.5	8.4	1.2
	percent any aid	38.7	26.4	19.4	15.0	11.6	9.6	15.8	2.2
All	percent Title IV aid	29.4	36.0	22.9	14.7	9.7	6.8	9.2	0.7
	percent any aid	41.1	28.4	20.5	14.9	11.1	8.8	14.6	1.7

Numbers of Students (in Thousands)

Academic Level			Distribution Among Those Receiving Aid						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$10,000	$100,000 and over
Undergraduate	number receiving Title IV aid	5,733	2,003	1,310	844	550	389	525	34
	number receiving any aid	7,658	2,155	1,546	1,115	830	652	1,084	120
Graduate	number receiving Title IV aid	490	208	96	62	43	31	41	6
	number receiving any aid	1,034	268	198	153	119	98	160	22
All	number receiving Title IV aid	6,224	2,210	1,406	905	593	420	566	40
	number receiving any aid	8,692	2,423	1,743	1,268	949	750	1,244	142

*Data on family income is missing for 2,188 students.

Summary Table E-7
Percentages and Numbers of Students Receiving Title IV Aid and Any Aid by Dependency Status and Their Distribution by Type of Institution: 1992-93

Percentages of Students

Dependency Status		Overall Percent	Distribution Among Those Receiving Aid						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	percent Title IV aid	30.4	41.1	18.0	27.5	1.6	10.0	1.0	0.9
	percent any aid	41.7	41.9	19.1	27.2	1.5	7.6	1.7	1.0
Independent	percent Title IV aid	28.7	23.9	29.4	11.7	2.4	19.8	6.7	6.0
	percent any aid	40.6	20.9	31.3	11.6	2.1	15.1	10.4	8.6
All	percent Title IV aid	29.4	31.6	24.3	18.7	2.1	15.4	4.2	3.7
	percent any aid	41.1	30.1	26.0	18.4	1.9	11.8	6.6	5.3

Numbers of Students (in Thousands)

Dependency Status			Distribution Among Those Receiving Aid						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	number receiving Title IV aid	2,765	1,136	499	761	44	275	26	24
	number receiving any aid	3,793	1,590	724	1,031	59	287	63	38
Independent	number receiving Title IV aid	3,458	828	1,015	405	85	684	232	208
	number receiving any aid	4,899	1,025	1,533	566	104	738	511	421
All	number receiving Title IV aid	6,224	1,965	1,514	1,167	128	960	258	232
	number receiving any aid	8,692	2,616	2,257	1,597	163	1,025	574	460

Summary Table E-8

Percentages and Numbers of Students Receiving Title IV Aid and Any Aid by Dependency Status and Their Distribution by Family Income*: 1992-93

Percentages of Students

Dependency Status		Overall Percent	Distribution Among Those Receiving Aid						
			Less Than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	percent Title IV aid	30.4	14.3	20.4	18.6	15.0	12.0	18.4	1.3
	percent any aid	41.7	11.1	16.3	15.7	14.7	13.2	25.7	3.3
Independent	percent Title IV aid	28.7	52.9	24.9	11.7	5.5	2.8	2.1	0.1
	percent any aid	40.6	41.4	23.6	14.3	8.5	5.5	6.3	0.4
All	percent Title IV aid	29.4	36.0	22.9	14.7	9.7	6.8	9.2	0.7
	percent any aid	41.1	28.4	20.5	14.9	11.1	8.8	14.6	1.7

Numbers of Students (in Thousands)

Dependency Status			Distribution Among Those Receiving Aid						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	number receiving Title IV aid	2,765	386	549	500	403	323	495	36
	number receiving any aid	3,793	404	593	572	535	482	935	120
Independent	number receiving Title IV aid	3,458	1,824	857	405	190	97	71	4
	number receiving any aid	4,899	2,019	1,150	696	414	268	309	22
All	number receiving Title IV aid	6,224	2,210	1,406	905	593	420	566	40
	number receiving any aid	8,692	2,423	1,743	1,268	949	750	1,244	142

*Data on family income is missing for 2,188 students

Summary Table E-9
Average and Total Aid Among Students Receiving Title IV Aid and Any Aid by Academic Level and Type of Institution: 1992-93

Average Aid

Academic Level			Type of Institution by Academic Level						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Undergraduate	average Title IV aid	$3,537	$3,768	$2,198	$4,585	$3,135	$3,957	--	--
	average of all aid	$4,171	$4,043	$2,072	$7,366	$3,503	$4,244	--	--
Graduate	average Title IV aid	$7,585	--	--	--	--	--	$6,950	$8,291
	average of all aid	$8,497	--	--	--	--	--	$7,506	$9,736
All	average Title IV aid	$3,856	$3,768	$2,198	$4,585	$3,135	$3,957	$6,950	$8,291
	average of all aid	$4,685	$4,043	$2,072	$7,366	$3,503	$4,244	$7,506	$9,736

Total Aid (in Millions)

Academic Level			Type of Institution by Academic Level						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Undergraduate	total Title IV aid	$20,277	$7,401	$3,327	$5,350	$402	$3,797	--	--
	total of all aid	$31,939	$10,574	$4,678	$11,767	$571	$4,350	--	--
Graduate	total Title IV aid	$3,720	--	--	--	--	--	$1,795	$1,925
	total of all aid	$8,787	--	--	--	--	--	$4,311	$4,476
All	total Title IV aid	$23,997	$7,401	$3,327	$5,350	$402	$3,797	$1,795	$1,925
	total of all aid	$40,726	$10,574	$4,678	$11,767	$571	$4,350	$4,311	$4,476

Summary Table E-10

Average and Total Aid Among Students Receiving Title IV Aid and Any Aid by Academic Level and Family Income*: 1992-93

Average Aid

Academic Level			Family Income						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	average Title IV aid	$3,551	$3,576	$3,396	$3,386	$3,562	$3,778	$3,895	$4,024
	average of all aid	$4,201	$4,287	$3,970	$3,980	$4,165	$4,519	$4,426	$4,161
Graduate	average Title IV aid	$7,575	$8,260	$7,185	$7,487	$7,083	$6,675	$6,400	$7,265
	average of all aid	$8,561	$12,255	$9,767	$7,604	$6,705	$5,569	$5,372	$5,966
All	average Title IV aid	$3,870	$4,016	$3,654	$3,665	$3,820	$3,995	$4,076	$4,481
	average of all aid	$4,722	$5,169	$4,627	$4,417	$4,482	$4,656	$4,548	$4,446

Total Aid (in Millions)

Academic Level			Family Income						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	total Title IV aid	$20,079	$7,161	$4,450	$2,857	$1,958	$1,468	$2,046	$138
	total of all aid	$31,507	$9,237	$6,137	$4,436	$3,457	$2,945	$4,798	$498
Graduate	total Title IV aid	$3,685	$1,716	$688	$461	$308	$209	$263	$41
	total of all aid	$8,717	$3,289	$1,930	$1,163	$795	$546	$862	$134
All	total Title IV aid	$23,764	$8,877	$5,138	$3,318	$2,266	$1,677	$2,309	$179
	total of all aid	$40,224	$12,525	$8,067	$5,598	$4,252	$3,491	$5,660	$631

*Data on family income is missing for 2,188 students.

Summary Table E-11
Average and Total Aid Among Students Receiving Title IV Aid and Any Aid by Dependency Status and Type of Institution: 1992-93

Average Aid

Dependency Status		Type of Institution						
		Undergraduate					Graduate	
		Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	average Title IV aid	$3,708	$3,556	$2,082	$4,570	$3,298	$4,322	$6,772	$7,723
	average of all aid	$4,957	$3,924	$2,100	$8,331	$3,812	$4,550	$7,292	$11,875
Independent	average Title IV aid	$3,974	$4,058	$2,254	$4,613	$3,051	$3,810	$6,970	$8,356
	average of all aid	$4,476	$4,226	$2,059	$5,610	$3,329	$4,125	$7,533	$9,540
All	average Title IV aid	$3,856	$3,768	$2,198	$4,585	$3,135	$3,957	$6,950	$8,291
	average of all aid	$4,685	$4,043	$2,072	$7,366	$3,503	$4,244	$7,506	$9,736

Total Aid (in Millions)

Dependency Status		Type of Institution						
		Undergraduate					Graduate	
		Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	total Title IV aid	$10,254	$4,041	$1,038	$3,479	$144	$1,190	$179	$183
	total of all aid	$18,799	$6,241	$1,520	$8,590	$224	$1,305	$462	$457
Independent	total Title IV aid	$13,743	$3,360	$2,289	$1,870	$258	$2,607	$1,617	$1,742
	total of all aid	$21,927	$4,333	$3,158	$3,177	$347	$3,045	$3,849	$4,019
All	total Title IV aid	$23,997	$7,401	$3,327	$5,350	$402	$3,797	$1,795	$1,925
	total of all aid	$40,726	$10,574	$4,678	$11,767	$571	$4,350	$4,311	$4,476

Summary Table E-12

Average and Total Aid Among Students Receiving Title IV Aid and Any Aid by Dependency Status and Family Income*: 1992-93

Average Aid

Dependency Status			Family Income						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	average Title IV aid	$3,735	$3,791	$3,516	$3,614	$3,691	$3,851	$3,960	$4,474
	average of all aid	$5,044	$4,903	$4,845	$5,157	$5,042	$5,373	$5,065	$4,480
Independent	average Title IV aid	$3,975	$4,064	$3,742	$3,728	$4,092	$4,476	$4,884	$4,545
	average of all aid	$4,482	$5,222	$4,515	$3,810	$3,757	$3,369	$2,983	$4,257
All	average Title IV aid	$3,870	$4,016	$3,654	$3,665	$3,820	$3,995	$4,076	$4,481
	average of all aid	$4,722	$5,169	$4,627	$4,417	$4,482	$4,656	$4,548	$4,446

Total Aid (in Millions)

Dependent Status			Family Income						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	total Title IV aid	$10,056	$1,464	$1,930	$1,808	$1,489	$1,244	$1,960	$162
	total of all aid	$18,360	$1,980	$2,872	$2,947	$2,697	$2,587	$4,738	$538
Independent	total Title IV aid	$13,708	$7,413	$3,208	$1,510	$777	$434	$349	$17
	total of all aid	$21,865	$10,545	$5,194	$2,651	$1,554	$904	$922	$93
All	total Title IV aid	$23,764	$8,877	$5,138	$3,318	$2,266	$1,677	$2,309	$179
	total of all aid	$40,224	$12,525	$8,067	$5,598	$4,252	$3,491	$5,660	$631

*Data on family income is missing for 2,188 students.

Table SE-1
Standard Errors for Summary Table E-1
Numbers of Students by Academic Level and Type of Institution, in Thousands: 1992-93

Academic Level	All Institutions	Type of Institution by Academic Level						
		Undergraduate					Graduate	
		Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private For-Profit	Public	Private
Undergraduate	461	220	399	153	59	131	--	--
Graduate	118	--	--	--	--	--	89	69
All	476	220	399	153	59	131	89	69

Table SE-2
Standard Errors for Summary Table E-2

Numbers of Students by Academic Level and Family Income*, in Thousands: 1992-93

Academic Level	All Incomes	Family Income (adjusted gross income)						
		Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	450	114	103	86	89	82	99	27
Graduate	115	23	17	21	23	17	34	5
All	465	116	104	88	92	84	104	27

*Data on family income is missing for 2,188 students.

Table SE- 3

Standard Errors for Summary Table E-3

Numbers of Students by Dependency Status and Type of Institution, in Thousands: 1992-93

Students	All Institutions	Type of Institution by Academic Level						
		Undergraduate					Graduate	
		Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	226	135	170	108	36	48	11	7
Independent	321	109	257	68	35	97	81	64
All	476	220	399	153	59	131	89	69

Table SE- 4

Standard Errors for Summary Table E-4

Numbers of Students by Dependency Status and Family Income*, in Thousands: 1992-93

Students	All Incomes	Family Income (adjusted gross income)						
		Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	214	31	36	39	46	53	82	24
Independent	319	98	87	72	67	54	60	11
All	465	116	104	88	92	84	104	27

*Data on family income is missing for 2,188 students.

Table SE- 5
Standard Errors for Summary Table E-5

Percentages and Numbers of Students Receiving Title IV Aid and Any Aid by Academic Level and Their Distribution by Type of Institution: 1992-93

Academic Level		Overall Percent	Distribution Among Those Receiving Aid						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit Four-year	Private, Not-For-Profit Two-year	Private, For-Profit	Public	Private
Undergraduate	percent Title IV aid	0.8	1.6	1.5	1.4	0.5	1.5	--	--
	percent any aid	0.8	1.5	1.5	1.2	0.4	1.2	--	--
Graduate	percent Title IV aid	0.7	--	--	--	--	--	3.1	3.1
	percent any aid	0.8	--	--	--	--	--	2.4	2.4
All	percent Title IV aid	0.7	1.4	1.4	1.3	0.4	1.4	0.4	0.3
	percent any aid	0.7	1.3	1.3	1.0	0.4	1.1	0.4	0.4

Numbers of Students (in Thousands)

Academic Level			Distribution Among Those Receiving Aid						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Undergraduate	number receiving Title IV aid	206	95	101	94	26	103	--	--
	number receiving any aid	244	119	135	107	32	106	--	--
Graduate	number receiving Title IV aid	29	--	--	--	--	--	26	15
	number receiving any aid	45	--	--	--	--	--	34	33
All	number receiving Title IV aid	208	95	101	94	26	103	26	15
	number receiving any aid	248	119	135	107	32	106	34	33

Table SE- 6
Standard Errors for Summary Table E-6
Percentages and Numbers of Students Receiving Title IV Aid and Any Aid by Academic Level and Their Distribution by Family Income*: 1992-93

Percentages of Students

Academic Level		Overall Percent	Distribution Among Those Receiving Aid						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	percent Title IV aid	0.8	0.8	0.5	0.4	0.4	0.3	0.4	0.1
	percent any aid	0.8	0.7	0.4	0.4	0.3	0.3	0.5	0.1
Graudate	percent Title IV aid	0.7	1.4	0.9	0.7	0.7	0.6	0.6	0.2
	percent any aid	0.8	1.0	0.7	0.7	0.6	0.5	0.7	0.3
All	percent Title IV aid	0.7	0.7	0.5	0.3	0.3	0.3	0.4	0.1
	percent any aid	0.7	0.6	0.4	0.3	0.3	0.3	0.4	0.1

Numbers of Students (in Thousands)

Academic Level			Distribution Among Those Receiving Aid						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	number receiving Title IV aid	206	94	59	36	26	18	23	4
	number receiving any aid	244	98	65	43	37	28	38	9
Graduate	number receiving Title IV aid	29	16	6	4	3	3	4	1
	number receiving any aid	45	18	10	8	8	7	10	3
All	number receiving Title IV aid	208	95	60	36	26	19	23	4
	number receiving any aid	248	100	66	44	38	29	40	9

*Data on family income is missing for 2,188 students.

Table SE-7
Standard Errors for Summary Table E-7
Percentages and Numbers of Students Receiving Title IV Aid and Any Aid by Dependency Status and Their Distribution by Type of Institution: 1992-93

Dependency Status		Overall Percent	Distribution Among Those Receiving Aid						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	percent Title IV aid	0.7	1.8	1.3	1.7	0.4	1.1	0.2	0.1
	percent any aid	0.8	1.7	1.3	1.5	0.4	0.9	0.2	0.1
Independent	percent Title IV aid	0.8	1.3	1.7	1.1	0.5	1.9	0.7	0.4
	percent any aid	0.8	1.1	1.5	0.9	0.4	1.4	0.6	0.6
All	percent Title IV aid	0.7	1.4	1.4	1.3	0.4	1.4	0.4	0.3
	percent any aid	0.7	1.3	1.3	1.0	0.4	1.1	0.4	0.4

Numbers of Students (in Thousands)

Dependency Status			Distribution Among Those Receiving Aid						
			Undergraduate					Graduate	
			Public Four-year	Public Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	number receiving Title IV aid	101	57	39	60	12	34	4	3
	number receiving any aid	127	74	57	72	15	35	6	4
Independent	number receiving Title IV aid	136	45	73	44	19	79	22	14
	number receiving any aid	162	55	94	48	21	82	30	30
All	number receiving Title IV aid	208	95	101	94	26	103	26	15
	number receiving any aid	248	119	135	107	32	106	34	33

Table SE-8

Standard Errors for Summary Table E-8

Percentages and Numbers of Students Receiving Title IV Aid and Any Aid by Dependency Status and Their Distribution by Family Income*: 1992-93

Percentages of Students

Dependency Status		Overall Percent	Distribution Among Those Receiving Aid						
			Less Than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	percent Title IV aid	0.7	0.8	0.7	0.5	0.5	0.5	0.7	0.1
	percent any aid	0.8	0.6	0.5	0.4	0.5	0.5	0.7	0.2
Dependent	percent Title IV aid	0.8	0.8	0.6	0.4	0.3	0.2	0.2	0.0
	percent any aid	0.8	0.8	0.5	0.5	0.4	0.3	0.3	0.1
Dependent	percent Title IV aid	0.7	0.7	0.5	0.3	0.3	0.3	0.4	0.1
	percent any aid	0.7	0.6	0.4	0.3	0.3	0.3	0.4	0.1

Numbers of Students (in Thousands)

Dependency Status			Distribution Among Those Receiving Aid						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	number receiving Title IV aid	101	27	28	24	20	16	22	4
	number receiving any aid	127	27	30	26	26	22	35	9
Independent	number receiving Title IV aid	136	79	42	21	13	7	6	1
	number receiving any aid	162	84	48	29	23	15	17	3
All	number receiving Title IV aid	208	95	60	36	26	19	23	4
	number receiving any aid	248	100	66	44	38	29	40	9

*Data on family income is missing for 2,188 students.

Table SE-9
Standard Errors for Summary Table E-9
Average and Total Aid Among Students Receiving Title IV Aid and Any Aid by Academic Level and Type of Institution: 1992-93
Average Aid

Academic Level			Type of Institution by Academic Level						
			Undergraduate					Graduate	
			Public, Four-year	Public, Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Undergraduate	average Title IV aid	$57	$47	$62	$166	$210	$193	--	--
	average of all aid	$87	$52	$54	$296	$328	$207	--	--
Graduate	average Title IV aid	$162	--	--	--	--	--	$321	$150
	average of all aid	$230	--	--	--	--	--	$341	$345
All	average Title IV aid	$63	$47	$62	$166	$210	$193	$321	$150
	average of all aid	$90	$52	$54	$296	$328	$207	$341	$345

Total Aid (in Millions)

Academic Level			Type of Institution by Academic Level						
			Undergraduate					Graduate	
			Public, Four-year	Public, Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Undergraduate	total Title IV aid	$706	$356	$245	$349	$85	$403	--	--
	total of all aid	$1,077	$475	$319	$753	$123	$452	--	--
Graduate	total Title IV aid	$273	--	--	--	--	--	$247	$137
	total of all aid	$510	--	--	--	--	--	$413	$364
All	total Title IV aid	$757	$356	$245	$349	$85	$403	$247	$137
	total of all aid	$1,192	$475	$319	$753	$123	$452	$413	$364

Table SE-10
Standard Errors for Summary Table E-10
Average and Total Aid Among Students Receiving Title IV Aid and Any Aid by Academic Level and Family Income*: 1992-93

Academic Level			Family Income						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	average Title IV aid	$57	$83	$77	$70	$86	$88	$63	$245
	average of all aid	$88	$106	$98	$109	$147	$191	$127	$248
Graduate	average Title IV aid	$163	$186	$192	$205	$298	$380	$329	$656
	average of all aid	$224	$379	$304	$299	$349	$285	$279	$583
All	average Title IV aid	$63	$98	$79	$72	$86	$87	$66	$252
	average of all aid	$91	$145	$111	$107	$141	$171	$117	$230

Total Aid (in Millions)

Academic Level			Family Income						
			Less than $10,000	$10,000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Undergraduate	total Title IV aid	$699	$282	$193	$124	$102	$80	$96	$16
	total of all aid	$1,067	$347	$243	$191	$167	$162	$225	$45
Graduate	total Title IV aid	$273	$164	$50	$34	$26	$21	$31	$9
	total of all aid	$508	$290	$123	$74	$66	$43	$70	$19
All	total Title IV aid	$750	$326	$199	$129	$105	$82	$101	$18
	total of all aid	$1,182	$452	$273	$204	$180	$168	$236	$49

*Data on family income is missing for 2,188 students.

Table SE-11
Standard Errors for Summary Table E-11
Average and Total Aid Among Students Receiving Title IV Aid and Any Aid by Dependency Status and Type of Institution: 1992-93

Dependency Status			Type of Institution						
			Undergraduate					Graduate	
			Public, Four-year	Public, Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	average Title IV aid	$60	$52	$82	$137	$396	$266	$684	$506
	average of all aid	$116	$57	$72	$290	$741	$280	$542	$677
Independent	average Title IV aid	$82	$70	$70	$250	$147	$189	$296	$152
	average of all aid	$98	$83	$63	$264	$188	$212	$332	$367
All	averate Title IV aid	$63	$47	$62	$166	$210	$193	$321	$150
	average of all aid	$90	$52	$54	$296	$328	$207	$341	$345

Total Aid (in Millions)

Dependency Status			Type of Institution						
			Undergraduate					Graduate	
			Public, Four-year	Public, Two-year	Private, Not-For-Profit, Four-year	Private, Not-For-Profit, Two-year	Private, For-Profit	Public	Private
Dependent	total Title IV aid	$401	$210	$95	$251	$45	$182	$42	$22
	total of all aid	$755	$297	$131	$627	$71	$197	$65	$60
Independent	total Title IV aid	$475	$178	$177	$143	$55	$280	$212	$127
	total of all aid	$680	$223	$224	$206	$78	$325	$358	$329
All	total Title IV aid	$757	$356	$245	$349	$85	$403	$247	$137
	total of all aid	$1,192	$475	$319	$753	$123	$452	$413	$364

Table SE-12
Standard Errors for Summary Table E-12

Average and Total Aid Among Students Receiving Title IV Aid and Any Aid by Dependency Status and Family Income*: 1992-93

Dependency Status			Family Income						
			Less than $10,000	$10,0000-$20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	average Title IV aid	$59	$138	$93	$85	$98	$95	$71	$273
	average of all aid	$118	$204	$157	$158	$182	$216	$135	$258
Independent	average Title IV aid	$82	$103	$94	$111	$138	$183	$202	$461
	average of all aid	$99	$154	$123	$127	$170	$176	$156	$535
All	average Title IV aid	$63	$98	$79	$72	$86	$87	$66	$252
	average of all aid	$91	$145	$111	$107	$141	$171	$117	$230

Total Aid (in Millions)

Dependent Status			Family Income						
			Less than $10,000	$10,0000 $20,000	$20,000-$30,000	$30,000-$40,000	$40,000-$50,000	$50,000-$100,000	$100,000 and over
Dependent	total Title IV aid	$394	$87	$100	$91	$83	$69	$95	$17
	total of all aid	$744	$104	$143	$152	$144	$153	$229	$45
Independent	total Title IV aid	$475	$283	$142	$72	$49	$36	$29	$5
	total of all aid	$678	$408	$197	$111	$88	$56	$58	$19
All	total Title IV aid	$750	$326	$199	$129	$105	$82	$101	$18
	total of all aid	$1,182	$452	$273	$204	$180	$168	$236	$49

*Data on family income is missing for 2,188 students

APPENDIX F
Formulation of the Generalized Raking Model

Raking-ratio adjustment of sampling weights (Oh and Schuren, 1983) is an extension of poststratification estimation employing exponential weight multipliers of the form $\lambda_h \equiv \exp(\alpha + x_h \beta)$ for cross-class cells or poststrata denoted by "h." In this formulation of raking, x_h is a p element vector of one-zero indicator variables corresponding to a hierarchical factorial model. That is, x_h includes indicator variables for the one-way and multi-way subclassifications whose population size distributions are constrained by the raking or iterative-proportional-fitting (IPF).

The ranking algorithm yields weight adjustment multipliers that satisfy the following constraint equations

$$\sum_{h=1}^{H} W_{h\cdot} \, Exp(\alpha + x_h \beta) = N_o \qquad (1)$$

and

$$\sum_{h=1}^{H} W_{h\cdot} \, Exp(\alpha + x_h \beta) x_h^T = \eta_o^T \qquad (2)$$

where $W_{h\cdot}$ is the sample weight sum for poststratum h and N_o is the desired total weight sum. The p element row vector η_o contains the desired post-raking sums for the one-way and multi-way marginal subpopulations indicated by the one-zero indicators in x_h. Note that with the total weight sum constrained, the weight sum for each category of a variable with A levels will be constrained by including in x_h indicators of any (A-1) of these levels. If xa_h denotes the subset of x_h corresponding to these (A-1) indicators and xb_h is an analogous vector of (B-1) indicators for another one-way margin with B levels, then the additional set of indicators required to constrain the weight sum for each level of the two-way (A by B) margin is the vector xa_h @ xb_h where @ denotes the Kroneker product.

The form of the raking equations displayed in **(1)** and **(2)** suggests the exponential regression extension developed by Folsom (1991). With x_k denoting a general vector of regressors known for the k-th eligible sample student and with η_o containing universe-level control totals for the elements of x_k, the generalized raking model requires α and β satisfying

$$\sum_{k=1}^{n} W_k \exp(\alpha + x_k \beta) = N_o \qquad (3)$$

and

$$\sum_{k=1}^{n} W_k \exp(\alpha + x_k \beta) x_k^T = \eta_o^T \qquad (4)$$

where W_k is the sampling weight for the k-th sample student and the superscript T denotes the matrix transpose operator.

This model was implemented for the NPSAS:93 generalized raking weight adjustments using the following control variables:

x_1 = a one-zero indicator of receipt of a Pell grant;

x_2 = an 8-element vector indicating receipt of a Pell grant by the first 8 of the 9 levels of institutional sector shown in Table 6.4;

x_3 = a 2-element vector indicating student level (undergraduate or graduate);

x_4 = the best estimate of the dollar amount of any Pell award received (zero if none was received); and

x_5 =an 8-element vector indicating the dollar amount of any Pell grant received by the first 8 of the 9 levels of institutional sector shown in Table 6.3.

REFERENCES

Folsom, R.E. (1991). "Exponential and Logistic Weight Adjustments for Sampling and Nonresponse Error Reduction." *Proceedings of the Social Statistics Section of the American Statistical Association*, 197-202.

Oh, H.L. and Scheuren, F.S. (1983). "Weighting Adjustment for Unit Nonresponse." In: W. G. Madow, I. Olkin, and D. Rubin, eds., *Incomplete Data in Sample Surveys*, Vol. 2, 143-184.

APPENDIX G

Constrained Logistic Regression Formulation of the Adjustment for Survey Nonresponse

Logistic regression models are models for the probability of occurrence of a specified event. Such models are facilitated by defining a dichotomous outcome variable, such as the following for the k-th NPSAS-eligible sample student:

$$y_k = \begin{cases} 1 \text{ if the k-th sample student is a respondent} \\ 0 \text{ otherwise} \end{cases} \quad (1)$$

The probability that the k-th student is a respondent can then be expressed as the expected value of y_k, as follows:

$$p_k = E\{y_k\} \quad (2)$$

where E denotes the expectation with respect to an infinite superpopulation of which the finite population sampled is a single realization. The superpopulation framework is necessary because, for a finite population, the concept of "the probability of occurrence of specific event" simplifies to "the proportion of the population with that attribute."

A logistic regression model for the probability of occurrence results from expressing the above expected value as

$$p_k = F(x_k \beta) \quad (3)$$

where x_k is a row vector of independent predictor variables for the k-th eligible sample student, ß is the column vector of population-level logistic regression coefficients, and F is the cumulative distribution function of the logistic probability distribution, i.e.,

$$F(u) = [1 + Exp(-u)]^{-1} \quad (4)$$

Alternatively, the logistic regression model can be expressed as

$$p_k = [1 + Exp(-x_k \beta)]^{-1} + e_k \quad (5)$$

where e_k is a random error term whose expected value (with respect to the superpopulation) is zero and whose variance-covariance matrix depends on the characteristics of the superpopulation that resulted in the universe observable during the survey.

When the predicted probability of response is used as the survey nonresponse adjustment, the nonresponse adjustment factor for the k-th sample student is the reciprocal of the student's predicted probability of being a respondent, namely

$$\lambda_k = 1 + Exp(-x_k\beta) \quad .(6)$$

These nonresponse adjustment factors have a minimum value of unity (1.00) but can be arbitrarily large.

Unusually large nonresponse adjustment factors can result in variance inflation and loss of precision. Therefore, nonresponse adjustment factors are often constrained to be no greater than some fixed upper bound. Two ways to accomplish this objective using the predicted probabilities of response are: (1) to form weighting classes based on the predicted probabilities of response, effectively averaging the nonresponse adjustment factors within the weighting classes or (2) to modify the logistic model to restrict the size the adjustment factor, λ_k. The latter approach was adopted for the NPSAS:93 nonresponse weight adjustments.

Using methodology developed by Deville and Särndal (1992), the nonresponse adjustment factor resulting from the constrained logistic regression model can be represented as

$$\lambda'_k = 1 + \alpha'_k \quad .(7)$$

where

$$\alpha'_k = \frac{L(U-1) + U(1-L)\,Exp\,(-A\,x_k\,\beta)}{(U-1) + (1-L)\,Exp\,(-A\,x_k\,\beta)} \qquad (8)$$

and

$$A = \frac{U-L}{(1-L)\,(U-1)} \qquad (9)$$

The theoretical bounds on the nonresponse adjustment factor are then

$$1 + L \le \lambda'_k \le 1 + U \quad (10)$$

where

$$0 \le L < 1 \text{ and } U > 1 \quad .(11)$$

This methodology was implemented for NPSAS:93 with L=0 and U=2 so that the resulting bound on the nonresponse adjustment factor were:

$$1 \le \lambda'_k \le 3 \quad .(12)$$

REFERENCES

Deville, J-C. and Särndal, C-E. (1992). "Calibration Estimators in Survey Sampling." *Journal of the American Statistical Association 87:418*, 376-382.

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